

CHRONIC AQUATIC TOXICITY TEST REPORT



New England Bioassay
a Division of GZA GeoEnvironmental, Inc.

77 Batson Drive
Manchester, CT
06042
860-643-9560
FAX 860-646-7169

Specialty Minerals, Inc

Adams, MA

NPDES Permit: MA0005991

Receiving Water: Hoosic River

Test Start Date: February 8, 2016

Test Period: February 23, 2016

Report Prepared by:

New England Bioassay
A Division of GZA GeoEnvironmental, Inc.
77 Batson Dr.
Manchester, CT 06042

NEB Project Number: 05.0044739.00

Report Date: March 7, 2016

Report Submitted to:

Specialty Minerals, Inc
260 Columbia St.
Adams, MA 01220

Sample ID: Effluent

Please contact the Lab Manager, Kim Wills, at (860) 858-3153 or kimberly.wills@gza.com
if you have any questions concerning these results.

NEW ENGLAND BIOASSAY, A DIVISION OF GZA EPA TEST SUMMARY SHEET
Facility Name: Specialty Minerals, Inc Test Start Date: 2/8/16
NPDES Permit Number: MA0005991 Pipe Number: _____

<u>Test Type</u>	<u>Test Species</u>	<u>Sample Type</u>	<u>Sample Method</u>
<u>Acute</u>	<u>Fathead Minnow</u>	<u>Prechlorinated</u>	<u>Grab</u>
<u>Chronic</u>	<u>X Ceriodaphnia</u>	<u>Dechlorinated</u>	<u>X Composite</u>
<u>Modified</u>	<u>Daphnia Pulex</u>	<u>Chlorine Spiked in Lab</u>	<u>Flowthru</u>
(chronic reporting acute values)	<u>Mysid Shrimp</u>	<u>Chlorinated on site</u>	<u>Other</u>
<u>24hr screening</u>	<u>Sheepshead</u>	<u>X Unchlorinated</u>	
	<u>Menidia</u>		
	<u>Sea Urchin</u>	<u>TRC conc. <u>0.009</u> mg/L</u>	
	<u>Champia</u>		
	<u>Selenastrum</u>		
	<u>Other</u>		

Dilution Water

- X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Hoosic River)
— alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name: _____)
— synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;
— or artificial sea salts mixed with deionized water;
— deionized water and hypersaline brine; or
— other _____

Effluent sampling date (s): 2/7-8/16 2/9-10/16 2/11-12/16

Effluent concentrations tested (in%): 0 6.25 12.5 25 27.17 50 100

* Permit limit concentration: 27.17%

Was effluent salinity adjusted? No If yes, to what value? N/A ppt

Reference Toxicant test date: 2/1/16 Reference Toxicant Test Acceptable: Yes X No _____

Age and Age Range of Test Organisms < 24 hours Source of Organisms NEB Lab

TEST RESULTS &PERMIT LIMITS
Test Acceptability Criteria

A. Synthetic Water Control

Mean Control Survival: 100% Mean Control Reproduction: 34.2 young/female

B. Receiving Water Control

Mean Control Survival: 100% Mean Control Reproduction: 35.6 young/female

C. Lab Culture Control Yes _ No X

Mean Control Survival: % Mean Control Reproduction: young/female

D. Thiosulfate Control Yes _ No X

Mean Control Survival: % Mean Control Reproduction: young/female

Test Variability

Test PMSD (growth) N/A Upper and Lower PMSD bound N/A low _ in-bounds _ high _
Test PMSD (reprod.) 8.87% Upper and Lower PMSD bound 13-47% low X in-bounds _ high _

Permit Limits & Test Results

	<u>Limits</u>		<u>Results</u>
LC50	>100%	LC50	>100%
		Upper Value	$\pm \infty$
		Lower Value	100%
		Data Analysis	
		Method Used	Graphical
A-NOEC	N/A	A-NOEC	100%
C-NOEC	27.17%	C-NOEC	100%
		LOEC	>100%
IC25		IC25	>100%
IC50	N/A	IC50	>100%

PMSD Comparison Discussion (Test Variability/Sensitivity)

Reproduction

- 1. PMSD exceeds upper bounds. Test results are highly variable and may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC).
- 1a. Test results indicate the discharge is not toxic at the PLC. Test is not sufficiently sensitive and must be repeated within 30 days of the initial test completion date using fresh samples.
- 1b. Test results indicate the discharge is toxic at the PLC. Test results are considered acceptable and the test does not have to be repeated.
- 2. The PMSD falls within the upper (47%) and lower (13%) bounds. Results are reportable.
- 3. PMSD falls below the lower bound test variability criterion. The test is very sensitive. The relative percent difference (RPD) between the control and each treatment was calculated and compared to the lower PMSD boundary
- 3a. The RPD values for each concentration fall below the lower bound. The differences observed in this test are considered statistically insignificant.
- 3b. The RPDs for the following concentrations are above the lower bound _____ . The results at these concentrations are considered statistically significantly lower than controls.

Concentration-Response Evaluation

The concentration-response relationship observed in this data set corresponds to the following item number in Chapter Four of "Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)", EPA 821-B-00-004, July 2000:

Survival Reprod.

- 1. Ideal concentration-response relationship
- — 2. All or nothing response
- — 3. Stimulatory response at low concentrations and detrimental effects at higher concentrations
- — 4. Stimulation at low concentrations but no significant effect at higher concentrations
- 5. Interrupted concentration-response: significant effects bracketed by non-significant effects
- — 6. Interrupted concentration-response: non-significant effects bracketed by significant effects
- — 7. Significant effects only at highest concentration
- — 8. Significant effects at all test concentrations but flat concentration-response curve
- — 9. Significant effects at all test concentrations with a sloped concentration-response curve
- — 10. Inverse concentration-response relationship

The concentration-response relationship was reviewed according to the above guidance document and the following determination was made:

Survival Reprod.

- 1. Results are reliable and reportable.
- — 2. Results are anomalous. An explanation is provided in the body of the report.
- — 3. Results are inconclusive. A retest with fresh samples is required. An explanation is provided in the body of the report.

NEW ENGLAND BIOASSAY, A DIVISION OF GZA EPA TEST SUMMARY SHEET
Facility Name: Specialty Minerals, Inc Test Start Date: 2/8/16
NPDES Permit Number: MA0005991 Pipe Number: _____

<u>Test Type</u>	<u>Test Species</u>	<u>Sample Type</u>	<u>Sample Method</u>
<input type="checkbox"/> Acute	X Fathead Minnow	<input type="checkbox"/> Prechlorinated	<input type="checkbox"/> Grab
<input type="checkbox"/> Chronic	<input type="checkbox"/> Ceriodaphnia	<input type="checkbox"/> Dechlorinated	X Composite
<input checked="" type="checkbox"/> Modified (chronic reporting acute values)	<input type="checkbox"/> Daphnia Pulex <input type="checkbox"/> Mysid Shrimp <input type="checkbox"/> Sheepshead <input type="checkbox"/> Menidia <input type="checkbox"/> Sea Urchin <input type="checkbox"/> Champia <input type="checkbox"/> Selenastrum <input type="checkbox"/> Other	<input type="checkbox"/> Chlorine Spiked in Lab <input type="checkbox"/> Chlorinated on site <input checked="" type="checkbox"/> Unchlorinated	<input type="checkbox"/> Flowthru <input type="checkbox"/> Other
<input type="checkbox"/> 24hr screening		TRC conc. <u>0.009</u> mg/L	

Dilution Water

- receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Hoosic River)
- alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name: _____)
- synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;
- or artificial sea salts mixed with deionized water;
- deionized water and hypersaline brine; or
- other _____

Effluent sampling date (s): 2/7-8/16 2/9-10/16 2/11-12/16

Effluent concentrations tested (in%): 0 6.25 12.5 25 27.17 50 100

* Permit limit concentration: 27.17%

Was effluent salinity adjusted? No If yes, to what value? N/A ppt

Reference Toxicant test date: 2/1/16 Reference Toxicant Test Acceptable: Yes No

Age and Age Range of Test Organisms < 24 hours Source of Organisms NEB Lab

TEST RESULTS & PERMIT LIMITS

Test Acceptability Criteria

A. Synthetic Water Control

Mean Control Survival: 100% Mean Control Weight: 0.719 mg

B. Receiving Water Control

Mean Control Survival: 85% Mean Control Weight: 0.670 mg

C. Lab Culture Control Yes No

Mean Control Survival: % Mean Control Weight: mg

D. Thiosulfate Control Yes No

Mean Control Survival: % Mean Control Weight: mg

Test Variability

Test PMSD (growth) N/A Upper and Lower PMSD bound 12-30% low in-bounds high
Test PMSD (reprod.) N/A Upper and Lower PMSD bound N/A low in-bounds high

Permit Limits & Test Results

LC50	<u>Limits</u>	<u>Results</u>
	$\geq 100\%$	$>100\%$
	Upper Value	$\pm \infty$
	Lower Value	100%
	Data Analysis	
	Method Used	Graphical
A-NOEC	N/A	100%
C-NOEC	27.17%	<6.25%
	LOEC	6.25%
IC25	N/A	>100%
IC50	N/A	>100%

PMSD Comparison Discussion (Test Variability/Sensitivity)

Growth

- _ 1. PMSD exceeds upper bounds. Test results are highly variable and may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC).
- _ 1a. Test results indicate the discharge is not toxic at the PLC. Test is not sufficiently sensitive and must be repeated within 30 days of the initial test completion date using fresh samples.
- _ 1b. Test results indicate the discharge is toxic at the PLC. Test results are considered acceptable and the test does not have to be repeated.
- _ 2. The PMSD falls within the upper (30%) and lower (12%) bounds. Results are reportable.
- _ 3. PMSD falls below the lower bound test variability criterion. The test is very sensitive. The relative percent difference (RPD) between the control and each treatment was calculated and compared to the lower PMSD boundary
- _ 3a. The RPD values for each concentration fall below the lower bound. The differences observed in this test are considered statistically insignificant.
- _ 3b. The RPDs for the following concentrations are above the lower bound _____ . The results at these concentrations are considered statistically significantly lower than controls.

Concentration-Response Evaluation

The concentration-response relationship observed in this data set corresponds to the following item number in Chapter Four of "Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)", EPA 821-B-00-004, July 2000:

Survival Growth

- _ _ 1. Ideal concentration-response relationship
- _ _ 2. All or nothing response
- _ _ 3. Stimulatory response at low concentrations and detrimental effects at higher concentrations
- _ _ 4. Stimulation at low concentrations but no significant effect at higher concentrations
- _ _ 5. Interrupted concentration-response: significant effects bracketed by non-significant effects
- _ _ 6. Interrupted concentration-response: non-significant effects bracketed by significant effects
- _ _ 7. Significant effects only at highest concentration
- X** _ 8. Significant effects at all test concentrations but flat concentration-response curve
- _ _ 9. Significant effects at all test concentrations with a sloped concentration-response curve
- _ _ 10. Inverse concentration-response relationship

The concentration-response relationship was reviewed according to the above guidance document and the following determination was made:

Survival Growth

- X** _ 1. Results are reliable and reportable.
- _ _ 2. Results are anomalous. An explanation is provided in the body of the report.
- _ _ 3. Results are inconclusive. A retest with fresh samples is required. An explanation is provided in the body of the report.

Whole Effluent Toxicity Testing Report Conclusions and Notes

Client Name/Project: Specialty Minerals, Inc Test Date: 2/8/16

Sample ID: Effluent

Your results were as follows:

- Passed all whole effluent toxicity permit limits
- Failed the following permit limit(s): *C. dubia*: LC50 C-NOEC *P. promelas*: LC50 C-NOEC
Please proceed according to the instructions in your permit.
- Original Test Invalid – **Valid retest performed. Both test and retest results are attached.**
- A retest using fresh samples must be performed within 30 days of the initial test completion date (____) due to the test condition described below. See next page for further explanation.
 Test Invalid due to: Diluent toxicity Synthetic control toxicity
 Test not sufficiently sensitive. PMSD exceeds upper bound.
 Results are inconclusive due to an unusual concentration-response relationship.
- Available information is insufficient to determine whether this test passed or failed. Please compare results to your permit limits. Please submit a current copy of your permit to the GZA Lab so that we can determine the status of future tests results and help ensure your compliance with permit requirements.
- Additional testing for metals was required on the second and third effluent samples due to the following:
 Renewal sample(s) were of sufficient potency to cause lethality to 50% or more of the test organisms:
Sample #: 2 3 Species: Cd Pp Conc.: 6.25% 12.5% 25% 50% 100% ____%
 The test failed its permit limit for: *C. dubia*: LC50 C-NOEC *P. promelas*: LC50 C-NOEC

Diluent Toxicity:

- Testing will be or has been performed according to the Case 1 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water.
- Retesting will be or has been performed according to the Case 1 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water.
- This is your _____ case of dilution water toxicity. Please proceed according to the Case 2 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water. The alternate dilution water you select for future tests for this species should be described as follows: "synthetic laboratory water made up according to EPA's toxicity test protocols, by adding specified amounts of salts into deionized water in order to match the hardness of our receiving water." Writing this letter should help you to avoid retests in the future.

Sampling Requirements:

A minimum of 3 samples were collected. Yes. No. See explanation on next page.

Samples were first used within 36 hours of collection. Yes. No. See explanation on next page.

Dechlorination Procedures: Chlorine was measured using 4500-CL-G DPD Colorimetric Method.
 Dechlorination was not required.

- Sample was dechlorinated to _____ mg/L by adding sodium thiosulfate to the sample prior to test initiation. A dechlorinated control of diluent water spiked with sodium thiosulfate equal in proportion to the amount added to the effluent sample was included in the test series.
- Chlorine elevated due to interference. Chlorine was _____ mg/L after interference check.
- Total Residual Chlorine was re-measured following aeration, and was found to be _____ mg/L.

Additional Notes or Other Conditions Affecting the Test:

*The 7-day LC50 for the fathead minnows could not be analyzed statistically due to the non-linear response in the effluent concentrations. Because the 25% effluent concentration had 42.5% survival, and this was the only effluent concentration where the survival fell below 50%, we are reporting the 7-day LC50 as <25%.

*All of the effluent concentrations in the fathead minnow test showed a statistically significant decrease in survival when compared with the survival in the laboratory synthetic dilution water control, which had 100% survival at test completion. Survival in the 6.25%, 12.5%, 25%, 27.1%, 50% and 100% effluent concentrations was 72.5%, 60%, 42.5%, 70%, 72.5% and 70%. It is stated in EPA-821-R-02-013 "concentrations above the NOEC for survival are excluded from the hypothesis test for growth effects", therefore because the NOEC was <6.25% for survival, hypothesis testing for growth could not be run and no NOEC for growth could be estimated with this data set. Guidelines indicated in "Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)", EPA 821-B-00-004, July 2000 were consulted. The concentration-response relationship observed in this test for survival resembles the relationship described in part 8 of Chapter 4 "Significant effects at all test concentrations but flat concentration-response curve". The only suggestion put forth that could relate to this test is the possibility of pathogens present in the effluent. "The most common identifier of pathogen effects are sporadic mortalities and extremely high variability between replicates. The pathogen effect is more common in tests using fish species than in invertebrate testing. This pathogen effect also may be evident only in chronic tests and not in acute tests." There was high variability between replicates noted in most of the effluent concentrations. Also, fungus was observed on the dead fish in some of the replicates, which can indicate a secondary infection of a natural pathogen. Evidence of a pathogen effect has been noted in previous Specialty Minerals effluent tests.

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Permittee)

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on _____
[Date] _____ [Authorized Signature]

[Print or Type Name and Title]

[Print or Type the Permittee's Name]

[Print or Type the NPDES Permit No.]

Since the WET test and report check is complicated, the New England Bioassay Aquatic Toxicity Laboratory has certified the validity of the WET test data in the section below. Please note that this does not relieve the permittee from its responsibility to sign and certify the report under 40 C.F.R. S 122.41(k).

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Bioassay Laboratory)

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on _____
[Date] _____ [Authorized Signature]

Kim Wills, Laboratory Manager
[Print or Type Name and Title]

New England Bioassay
[Print or Type Name of Bioassay Laboratory]

24. Telephone Contacts

If you have questions, please contact Joy Hilton, Water Technical Unit, at (617) 918-1877 or David McDonald, Ecosystem Assessment Unit, at (617) 918-8609.

NEW ENGLAND BIOASSAY TOXICITY DATA FORM
CHRONIC COVER SHEET

CLIENT: Specialty Minerals, Inc.
ADDRESS: 260 Columbia Street
Adams, MA 01220
SAMPLE TYPE: Industrial Effluent
DILUTION WATER: Hoosic River

C.dubia TEST ID # 16-180a
COC # c36-1286/87
PROJECT # 05.0044739.00

INVERTEBRATES

TEST SET UP (TECH INIT) CW
TEST SPECIES *Ceriodaphnia dubia*
NEB LOT# Cd16(RMH027)
AGE < 24 hours
TEST SOLUTION VOLUME (mls) 15
NO. ORGANISMS PER TEST CHAMBER 1
NO. ORGANISMS PER CONCENTRATION 10

Laboratory Control Water (CTRMH)

Batch Number	Hardness mg/L CaCO ₃	Alkalinity mg/L CaCO ₃
CTR16(MH002)	88	60

	DATE	TIME
TEST START:	2/8/16	1440
TEST END:	2/14/16	1240

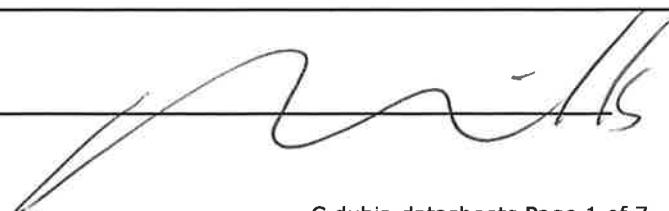
Results of *Ceriodaphnia dubia* Chronic Test

95% Confidence
Limits

48 Hour LC50	>100%	100%±∞
7 Day LC50	>100%	100%±∞
Survival NOEC	100%	
Survival LOEC	>100%	
Reproduction NOEC	100%	
Reproduction LOEC	>100%	
Reproduction IC ₂₅	>100%	

NOEC: NO OBSERVABLE EFFECT CONCENTRATION LOEC: LOWEST OBSERVABLE EFFECT CONCENTRATION

Comments: _____

REVIEWD BY:  DATE: 2/25/16

NEW ENGLAND BIOASSAY - CHRONIC TOXICITY TEST BROOD DATA SHEET

FACILITY NAME & ADDRESS:		Specialty Minerals, Inc., 260 Columbia Street, Adams, MA 01220									
NEB PROJECT NUMBER:		05.0044739.00			NEB TEST NUMBER:			16-180a		COC #	c36-1286/87
TEST ORGANISM:		<i>Ceriodaphnia dubia</i>					AGE: <24 hours		Lot # Cd16(RMH027)		
START DATE:		2/8/16		TIME:	1440	END DATE:	2/14/16		TIME:	1240	

Effluent Concentration	Culture Lot# Cd16(RMH027)											Total Live Young	# Live Adults	Analyst-Transfer	Analyst-Counts	
	Cup #	A1	A2	A3	A5	A6	A8	A9	A10	A11	A12					
	Day Number	Replicate														
NEB Lab Synthetic Control	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10	CW		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10	PD		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10	PD		
	3	4	6	5	5	5	6	6	4	6	52	10	KO	KO		
	4	✓	14	✓	✓	✓	✓	13	✓	✓	✓	27	10	MV	MV	
	5	10	✓	10	12	11	12	✓	13	8	✓	76	10	MV	MV	
	6	19	18	18	18	17	20	18	19	20	20	187	10	CW	CW	
	7															
	totals	33	38	33	35	33	37	37	38	32	26	342	10		MG	
Hoosic River Diluent		A	B	C	D	E	F	G	H	I	J					
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10			
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10			
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10			
	3	4	5	3	5	4	7	5	8	5	6	52	10			
	4	12	11	✓	✓	✓	10	13	✓	✓	✓	46	10			
	5	✓	✓	8	12	10	✓	✓	10	10	12	62	10			
	6	21	19	17	20	20	22	22	15	22	18	196	10			
	7															
	totals	37	35	28	37	34	39	40	33	37	36	356	10			
6.25%		A	B	C	D	E	F	G	H	I	J					
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10			
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10			
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10			
	3	5	5	4	6	3	6	4	4	4	5	46	10			
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10			
	5	12	10	10	6	10	10	12	13	10	8	101	10			
	6	24	20	14	18	18	20	20	19	20	17	190	10			
	7															
	totals	41	35	28	30	31	36	36	36	34	30	337	10			

Notes:

NEW ENGLAND BIOASSAY - CHRONIC TOXICITY TEST BROOD DATA SHEET

FACILITY NAME & ADDRESS:	Specialty Minerals, Inc., 260 Columbia Street, Adams, MA 01220		
NEB PROJECT NUMBER:	05.0044739.00	ORGANISM: <i>Ceriodaphnia dubia</i>	START DATE: 2/8/16

Effluent Concentration	Day Number	Replicate										Total Live Young	# Live Adults	Analyst-Transfer	Analyst-Counts	
		A	B	C	D	E	F	G	H	I	J					
12.5%	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	348	10			
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		0			
	3	6	5	7	7	5	5	6	5	5	6		57			
	4	12	✓	✓	✓	✓	✓	13	✓	✓	✓		37			
	5	✓	10	10	10	9	✓	12	11	12	✓		74			
	6	18	17	17	19	20	18	18	18	18	17		180			
	7															
25%	totals	36	32	34	36	34	36	36	34	35	35					
		A	B	C	D	E	F	G	H	I	J					
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10			
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10			
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		0			
	3	5	7	6	5	5	7	4	4	4	4		51			
	4	13	10	✓	12	✓	15	✓	✓	✓	✓		50			
	5	✓	✓	12	✓	10	✓	10	11	10	13		66			
27.17%	6	20	19	19	18	18	18	20	20	18	19		189			
	7															
	totals	38	36	37	35	33	40	34	35	32	36		356			
		A	B	C	D	E	F	G	H	I	J					
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10			
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10			
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		0			
	3	3	4	2	4	5	6	3	3	5	5		40			
50%	4	12	13	✓	✓	✓	10	✓	✓	✓	✓		35			
	5	✓	✓	8	10	12	✓	12	12	10	11		75			
	6	20	16	16	16	18	18	18	14	22	15		173			
	7															
	totals	35	33	26	30	35	34	33	29	37	31		323			
		A	B	C	D	E	F	G	H	I	J					
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10			
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10			
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		0			
	3	5	8	3	6	4	5	4	5	5	6		51			
	4	11	9	✓	✓	✓	11	✓	✓	✓	✓		31			
	5	✓	✓	9	10	10	✓	12	12	12	14		79			
	6	18	21	15	18	17	18	18	19	18	17		179			
	7															
	totals	34	38	27	34	31	34	34	36	35	37		340			

NEW ENGLAND BIOASSAY - CHRONIC TOXICITY TEST BROOD DATA SHEET

FACILITY NAME & ADDRESS: Specialty Minerals, Inc., 260 Columbia Street, Adams, MA 01220
NEB PROJECT NUMBER: 05.0044739.00 ORGANISM: *Ceriodaphnia dubia* START DATE: 2/8/16

CETIS Analytical Report

Report Date: 17 Feb-16 14:27 (p 1 of 5)
 Test Code: 16-180a | 14-4353-2990

Ceriodaphnia 7-d Survival and Reproduction Test

New England Bioassay

Analysis ID:	20-1060-6153	Endpoint:	2d Survival Rate	CETIS Version:	CETISv1.8.8
Analyzed:	17 Feb-16 14:23	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	07-0950-8134	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	08 Feb-16 14:40	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Receiving Water
Ending Date:	14 Feb-16 12:40	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	5d 22h	Source:	In-House Culture	Age:	<24H
Sample ID:	05-1663-1739	Code:	1ECB2CBB	Client:	Specialty Minerals, Inc.
Sample Date:	08 Feb-16 06:38	Material:	Not Applicable	Project:	
Receive Date:	08 Feb-16 11:20	Source:	Specialty Minerals		
Sample Age:	8h	Station:			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	1450959	200	Yes	Two-Point Interpolation

Point Estimates

Level	95% LCL	95% UCL
LC50	>100	N/A

2d Survival Rate Summary			Calculated Variate(A/B)								
Group	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	10	1	1	1	0	0	0.0%	0.0%	10	10
6.25		10	1	1	1	0	0	0.0%	0.0%	10	10
12.5		10	1	1	1	0	0	0.0%	0.0%	10	10
25		10	1	1	1	0	0	0.0%	0.0%	10	10
27.1		10	1	1	1	0	0	0.0%	0.0%	10	10
50		10	1	1	1	0	0	0.0%	0.0%	10	10
100		10	1	1	1	0	0	0.0%	0.0%	10	10

2d Survival Rate Detail

Group	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1	1	1	1	1	1	1	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
27.1		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

2d Survival Rate Binomials

Group	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
27.1		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 17 Feb-16 14:27 (p 2 of 5)
Test Code: 16-180a | 14-4353-2990

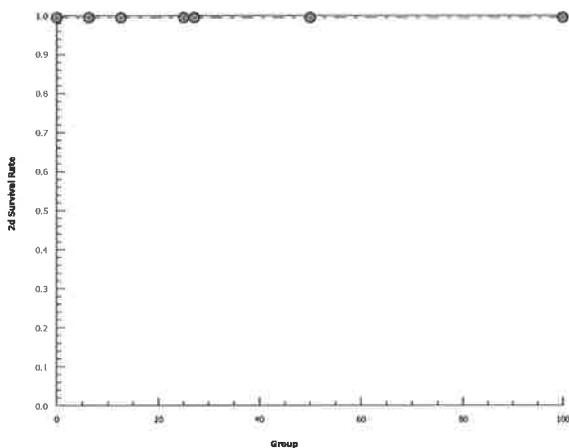
Ceriodaphnia 7-d Survival and Reproduction Test

New England Bioassay

Analysis ID: 20-1060-6153 Endpoint: 2d Survival Rate
Analyzed: 17 Feb-16 14:23 Analysis: Linear Interpolation (ICPIN)

CETIS Version: CETISv1.8.8
Official Results: Yes

Graphics



CETIS Analytical Report

Report Date:

17 Feb-16 14:27 (p 3 of 5)

Test Code:

16-180a | 14-4353-2990

Ceriodaphnia 7-d Survival and Reproduction Test**New England Bioassay**

Analysis ID:	00-6880-0255	Endpoint:	6d Survival Rate	CETIS Version:	CETISv1.8.8
Analyzed:	17 Feb-16 14:23	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	07-0950-8134	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	08 Feb-16 14:40	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Receiving Water
Ending Date:	14 Feb-16 12:40	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	5d 22h	Source:	In-House Culture	Age:	<24H
Sample ID:	05-1663-1739	Code:	1ECB2CBB	Client:	Specialty Minerals, Inc.
Sample Date:	08 Feb-16 06:38	Material:	Not Applicable	Project:	
Receive Date:	08 Feb-16 11:20	Source:	Specialty Minerals		
Sample Age:	8h	Station:			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	1398629	200	Yes	Two-Point Interpolation

Point Estimates

Level	95% LCL	95% UCL
LC50	>100	N/A

6d Survival Rate Summary														
Group	Control Type	Count	Calculated Variate(A/B)									A	B	
			Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	Rep 1	Rep 2	Rep 3		
0	Dilution Water	10	1	1	1	0	0	0.0%	0.0%	1	1	1	10	10
6.25		10	1	1	1	0	0	0.0%	0.0%	1	1	1	10	10
12.5		10	1	1	1	0	0	0.0%	0.0%	1	1	1	10	10
25		10	1	1	1	0	0	0.0%	0.0%	1	1	1	10	10
27.1		10	1	1	1	0	0	0.0%	0.0%	1	1	1	10	10
50		10	1	1	1	0	0	0.0%	0.0%	1	1	1	10	10
100		10	1	1	1	0	0	0.0%	0.0%	1	1	1	10	10

6d Survival Rate Detail

Group	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1	1	1	1	1	1	1	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
27.1		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

6d Survival Rate Binomials

Group	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
27.1		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 17 Feb-16 14:27 (p 4 of 5)
Test Code: 16-180a | 14-4353-2990

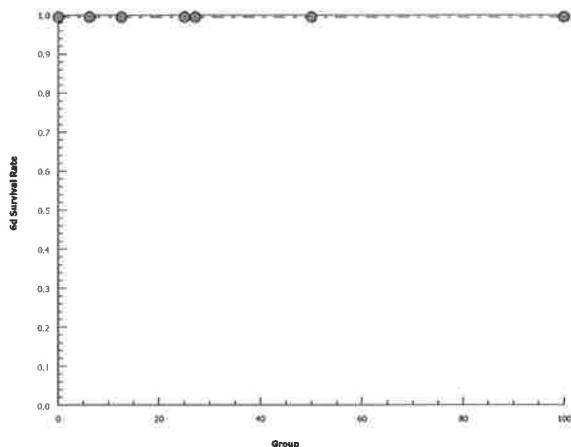
Ceriodaphnia 7-d Survival and Reproduction Test

New England Bioassay

Analysis ID: 00-6880-0255 Endpoint: 6d Survival Rate
Analyzed: 17 Feb-16 14:23 Analysis: Linear Interpolation (ICPIN)

CETIS Version: CETISv1.8.8
Official Results: Yes

Graphics

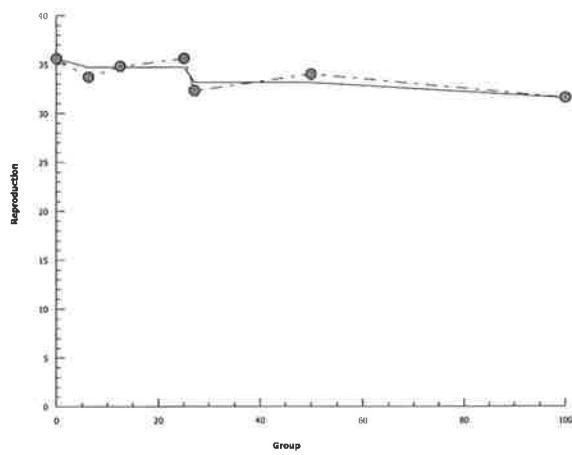


CETIS Analytical Report

Report Date: 17 Feb-16 14:27 (p 5 of 5)
 Test Code: 16-180a | 14-4353-2990

Ceriodaphnia 7-d Survival and Reproduction Test						New England Bioassay							
Analysis ID:	17-6947-5883	Endpoint:	Reproduction			CETIS Version:	CETISv1.8.8						
Analyzed:	17 Feb-16 14:24	Analysis:	Linear Interpolation (ICPIN)			Official Results:	Yes						
Batch ID:	07-0950-8134	Test Type:	Reproduction-Survival (7d)			Analyst:							
Start Date:	08 Feb-16 14:40	Protocol:	EPA/821/R-02-013 (2002)			Diluent:	Receiving Water						
Ending Date:	14 Feb-16 12:40	Species:	Ceriodaphnia dubia			Brine:	Not Applicable						
Duration:	5d 22h	Source:	In-House Culture			Age:	<24H						
Sample ID:	05-1663-1739	Code:	1ECB2CBB			Client:	Specialty Minerals, Inc.						
Sample Date:	08 Feb-16 06:38	Material:	Not Applicable			Project:							
Receive Date:	08 Feb-16 11:20	Source:	Specialty Minerals			Station:							
Sample Age: 8h													
Linear Interpolation Options													
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method								
Linear	Linear	1716359	200	Yes	Two-Point Interpolation								
Point Estimates													
Level	95% LCL	95% UCL											
IC25	>100	N/A											
IC50	>100	N/A											
Reproduction Summary			Calculated Variate										
Group	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect				
0	Dilution Water	10	35.6	28	40	1.077	3.406	9.57%	0.0%				
6.25		10	33.7	28	41	1.239	3.917	11.62%	5.34%				
12.5		10	34.8	32	36	0.4163	1.317	3.78%	2.25%				
25		10	35.6	32	40	0.7483	2.366	6.65%	0.0%				
27.1		10	32.3	26	37	1.044	3.302	10.22%	9.27%				
50		10	34	27	38	0.9888	3.127	9.2%	4.49%				
100		10	31.6	25	36	0.9333	2.951	9.34%	11.24%				
Reproduction Detail													
Group	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10		
0	Dilution Water	37	35	28	37	34	39	40	33	37	36		
6.25		41	35	28	30	31	36	36	36	34	30		
12.5		36	32	34	36	34	36	36	34	35	35		
25		38	36	37	35	33	40	34	35	32	36		
27.1		35	33	26	30	35	34	33	29	37	31		
50		34	38	27	34	31	34	34	36	35	37		
100		33	32	25	30	30	34	31	33	32	36		

Graphics



CETIS Analytical Report

Report Date: 17 Feb-16 14:27 (p 1 of 2)
 Test Code: 16-180a | 14-4353-2990

Ceriodaphnia 7-d Survival and Reproduction Test

New England Bioassay

Analysis ID:	20-1297-7192	Endpoint:	6d Survival Rate	CETIS Version:	CETISv1.8.8
Analyzed:	17 Feb-16 14:23	Analysis:	STP 2x2 Contingency Tables	Official Results:	Yes
Batch ID:	07-0950-8134	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	08 Feb-16 14:40	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Receiving Water
Ending Date:	14 Feb-16 12:40	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	5d 22h	Source:	In-House Culture	Age:	<24H
Sample ID:	05-1663-1739	Code:	1ECB2CBB	Client:	Specialty Minerals, Inc.
Sample Date:	08 Feb-16 06:38	Material:	Not Applicable	Project:	
Receive Date:	08 Feb-16 11:20	Source:	Specialty Minerals		
Sample Age:	8h	Station:			

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU
Untransformed		C > T	NA	NA	100	>100	NA	

Fisher Exact/Bonferroni-Holm Test

Control	vs	Group	Test Stat	P-Value	P-Type	Decision(α :5%)
Dilution Water		6.25	1	1.0000	Exact	Non-Significant Effect
		12.5	1	1.0000	Exact	Non-Significant Effect
		25	1	1.0000	Exact	Non-Significant Effect
		27.1	1	1.0000	Exact	Non-Significant Effect
		50	1	1.0000	Exact	Non-Significant Effect
		100	1	1.0000	Exact	Non-Significant Effect

Data Summary

Group	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect
0	Dilution Water	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
27.1		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%

6d Survival Rate Detail

Group	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1	1	1	1	1	1	1	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
27.1		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

6d Survival Rate Binomials

Group	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
27.1		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 17 Feb-16 14:27 (p 2 of 2)
Test Code: 16-180a | 14-4353-2990

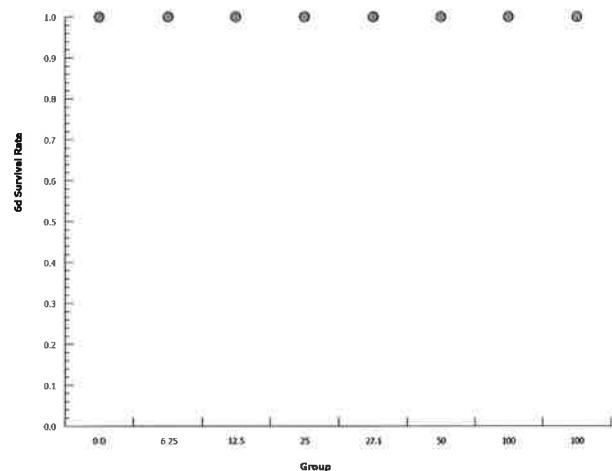
Ceriodaphnia 7-d Survival and Reproduction Test

New England Bioassay

Analysis ID: 20-1297-7192 Endpoint: 6d Survival Rate
Analyzed: 17 Feb-16 14:23 Analysis: STP 2x2 Contingency Tables

CETIS Version: CETISv1.8.8
Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 17 Feb-16 14:27 (p 1 of 2)
 Test Code: 16-180a | 14-4353-2990

Ceriodaphnia 7-d Survival and Reproduction Test					New England Bioassay				
Analysis ID:	10-3332-2844	Endpoint:	Reproduction			CETIS Version:	CETISv1.8.8		
Analyzed:	17 Feb-16 14:27	Analysis:	Parametric-Control vs Treatments			Official Results:	Yes		
Batch ID:	07-0950-8134	Test Type:	Reproduction-Survival (7d)			Analyst:			
Start Date:	08 Feb-16 14:40	Protocol:	EPA/821/R-02-013 (2002)			Diluent:	Receiving Water		
Ending Date:	14 Feb-16 12:40	Species:	Ceriodaphnia dubia			Brine:	Not Applicable		
Duration:	5d 22h	Source:	In-House Culture			Age:	<24H		
Sample ID:	05-1663-1739	Code:	1ECB2CBB			Client:	Specialty Minerals, Inc.		
Sample Date:	08 Feb-16 06:38	Material:	Not Applicable			Project:			
Receive Date:	08 Feb-16 11:20	Source:	Specialty Minerals			Station:			
Sample Age:	8h								

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	8.87%	25	27.1	26.03	

Dunnett Multiple Comparison Test

Control	vs	Group	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)
Dilution Water		6.25	1.409	2.342	3.159	18	0.2734	CDF	Non-Significant Effect
		12.5	0.5932	2.342	3.159	18	0.6388	CDF	Non-Significant Effect
		25	0	2.342	3.159	18	0.8571	CDF	Non-Significant Effect
		27.1*	2.447	2.342	3.159	18	0.0395	CDF	Significant Effect
		50	1.186	2.342	3.159	18	0.3651	CDF	Non-Significant Effect
		100*	2.966	2.342	3.159	18	0.0107	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)
Between	144.7714	24.12857	6	2.653	0.0233	Significant Effect
Error	573	9.095238	63			
Total	717.7714		69			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:1\%$)
Variances	Bartlett Equality of Variance	10.07	16.81	0.1217	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9675	0.9526	0.0656	Normal Distribution

Reproduction Summary

Group	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	10	35.6	33.16	38.04	36.5	28	40	1.077	9.57%	0.0%
6.25		10	33.7	30.9	36.5	34.5	28	41	1.239	11.62%	5.34%
12.5		10	34.8	33.86	35.74	35	32	36	0.4163	3.78%	2.25%
25		10	35.6	33.91	37.29	35.5	32	40	0.7483	6.65%	0.0%
27.1		10	32.3	29.94	34.66	33	26	37	1.044	10.22%	9.27%
50		10	34	31.76	36.24	34	27	38	0.9888	9.2%	4.49%
100		10	31.6	29.49	33.71	32	25	36	0.9333	9.34%	11.24%

Reproduction Detail

Group	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	37	35	28	37	34	39	40	33	37	36
6.25		41	35	28	30	31	36	36	34	35	30
12.5		36	32	34	36	34	36	36	34	35	35
25		38	36	37	35	33	40	34	35	32	36
27.1		35	33	26	30	35	34	33	29	37	31
50		34	38	27	34	31	34	34	36	35	37
100		33	32	25	30	30	34	31	33	32	36

CETIS Analytical Report

Report Date: 17 Feb-16 14:27 (p 2 of 2)
Test Code: 16-180a | 14-4353-2990

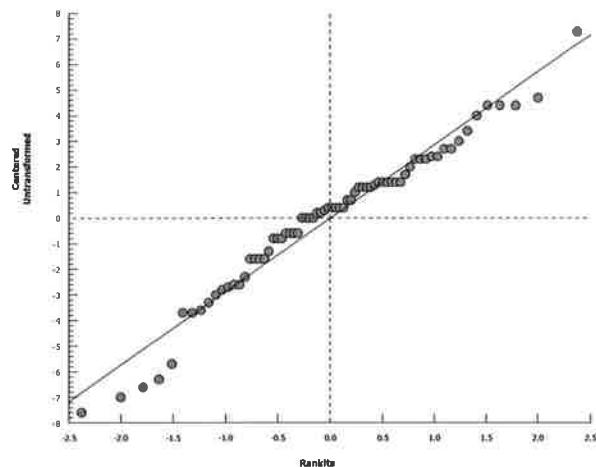
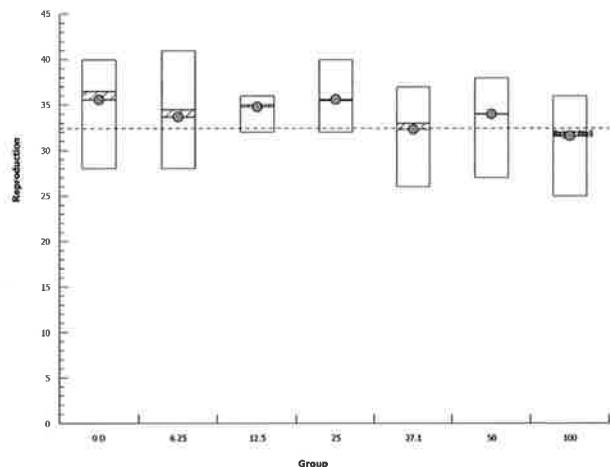
Ceriodaphnia 7-d Survival and Reproduction Test

New England Bioassay

Analysis ID: 10-3332-2844 Endpoint: Reproduction
Analyzed: 17 Feb-16 14:27 Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.8.8
Official Results: Yes

Graphics



Relative Difference Calculations for PMSDs below the lower bound

Concentration % effluent	Reproduction	Relative Difference from Diluent	Does Relative Difference Exceed 13?
100%	31.6	11.23595506	no
50%	34	4.494382022	no
27.17%	32.3	9.269662921	no
25%	35.6	0	no
12.5%	34.8	2.247191011	no
6.25%	33.7	5.337078652	no
Diluent	35.6		

$$\text{Relative Difference} = \frac{(\text{control mean} - \text{treatment mean})}{\text{control mean}} \times 100$$

NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS:		Specialty Minerals, Inc., 260 Columbia Street, Adams, MA 01220					
NEB PROJECT NUMBER:		05.0044739.00		TEST ORGANISM		<i>Ceriodaphnia dubia</i>	
DILUTION WATER SOURCE:		Hoosic River			START DATE:	2/8/16	TIME: 1440
ANALYST	CW	KO	PD	PD	MV	MV	
NEB Lab Synthetic Control	1	2	3	4	5	6	7
Temp °C Initial	25.5	24.4	24.0	25.1	25.0	24.8	
D.O. mg/L Initial	8.0	8.3	8.2	8.2	8.3	8.3	
pH s.u. Initial	7.7	7.4	7.5	7.6	7.7	7.7	
Conductivity µS Initial	325	321	327	319	320	312	
Temp °C Final	24.0	24.6	25.4	24.8	24.0	24.4	
D.O. mg/L Final	8.4	8.4	8.3	8.6	8.5	8.9	
pH s.u. Final	7.9	8.0	8.3	7.8	8.0	8.3	
Conductivity µS Final	352	351	353	384	351	341	
Hoosic River Diluent		1	2	3	4	5	6
							7
Temp °C Initial	25.7	24.5	24.1	25.6	25.0	24.8	
D.O. mg/L Initial	10.6	8.5	9.4	9.4	8.8	8.3	
pH s.u. Initial	7.6	7.6	7.8	7.7	7.8	7.9	
Conductivity µS Initial	255	254	284	283	330	326	
Temp °C Final	24.0	24.6	25.5	24.0	24.0	24.4	
D.O. mg/L Final	8.4	8.5	8.5	8.5	8.6	8.9	
pH s.u. Final	8.1	8.0	8.4	8.2	8.3	8.5	
Conductivity µS Final	297	279	313	350	390	353	
6.25%		1	2	3	4	5	6
							7
Temp °C Initial	25.9	24.8	24.1	25.8	25.6	25.6	
D.O. mg/L Initial	11.0	8.8	9.4	9.4	9.9	9.3	
pH s.u. Initial	7.8	7.7	7.8	7.7	7.8	7.9	
Conductivity µS Initial	269	272	299	298	341	341	
Temp °C Final	24.0	24.9	25.5	24.0	24.0	24.4	
D.O. mg/L Final	8.4	8.4	8.5	8.5	8.7	8.9	
pH s.u. Final	8.2	8.0	8.5	8.3	8.3	8.5	
Conductivity µS Final	296	298	337	352	378	366	
12.5%		1	2	3	4	5	6
							7
Temp °C Initial	25.9	24.7	24.0	25.8	25.6	25.5	
D.O. mg/L Initial	10.8	8.7	9.4	9.4	10.0	9.4	
pH s.u. Initial	7.8	7.8	7.8	7.7	7.8	7.9	
Conductivity µS Initial	285	288	317	318	360	359	
Temp °C Final	24.0	24.7	25.3	24.0	24.0	24.3	
D.O. mg/L Final	8.5	8.5	8.6	8.6	8.7	9.0	
pH s.u. Final	8.3	8.3	8.5	8.4	8.5	8.5	
Conductivity µS Final	308	316	341	361	391	383	

NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS:		Specialty Minerals, Inc., 260 Columbia Street, Adams, MA 01220						
NEB PROJECT NUMBER:		05.0044739.00			TEST ORGANISM		<i>Ceriodaphnia dubia</i>	
DILUTION WATER SOURCE:		Hoosic River			START DATE:		2/8/16	TIME: 1440
25%	1	2	3	4	5	6	7	Remarks
Temp °C	Initial	25.9	24.8	24.0	25.6	25.6	25.5	
D.O. mg/L	Initial	10.6	8.7	9.3	9.4	10.0	9.4	
pH s.u.	Initial	7.8	7.9	7.8	7.7	7.8	7.8	
Conductivity µS	Initial	321	323	354	353	395	393	
Temp °C	Final	24.0	24.7	25.5	24.0	24.0	24.4	
D.O. mg/L	Final	8.5	8.5	8.5	8.7	8.6	9.1	
pH s.u.	Final	8.3	8.3	8.5	8.4	8.5	8.5	
Conductivity µS	Final	343	371	408	384	420	448	
27.17%	1	2	3	4	5	6	7	Remarks
Temp °C	Initial	25.9	24.8	24.0	25.5	25.5	25.4	
D.O. mg/L	Initial	10.4	8.7	9.3	9.3	9.7	9.4	
pH s.u.	Initial	7.7	8.0	7.9	7.7	7.8	7.8	
Conductivity µS	Initial	332	331	361	359	403	398	
Temp °C	Final	24.0	24.6	25.8	24.0	24.0	24.6	
D.O. mg/L	Final	8.5	8.5	8.7	8.8	8.8	9.1	
pH s.u.	Final	8.3	8.4	8.5	8.4	8.6	8.5	
Conductivity µS	Final	350	358	390	396	423	419	
50%	1	2	3	4	5	6	7	Remarks
Temp °C	Initial	25.9	24.8	24.0	25.2	25.5	25.4	
D.O. mg/L	Initial	10.2	8.6	9.2	9.3	9.5	9.3	
pH s.u.	Initial	7.7	8.0	7.8	7.7	7.7	7.8	
Conductivity µS	Initial	389	342	422	419	455	457	
Temp °C	Final	24.0	24.7	25.9	24.0	24.0	24.8	
D.O. mg/L	Final	8.5	8.6	8.7	9.0	9.0	9.2	
pH s.u.	Final	8.4	8.4	8.5	8.5	8.6	8.6	
Conductivity µS	Final	404	427	455	445	474	495	
100%	1	2	3	4	5	6	7	Remarks
Temp °C	Initial	25.4	24.9	24.1	24.2	25.4	25.3	
D.O. mg/L	Initial	9.6	8.5	8.9	9.4	9.7	9.3	
pH s.u.	Initial	7.6	7.9	7.8	7.7	7.7	7.7	
Conductivity µS	Initial	537	536	560	557	582	581	
Temp °C	Final	24.0	24.7	25.9	24.0	24.0	24.8	
D.O. mg/L	Final	8.6	8.7	8.7	9.0	8.5	9.3	
pH s.u.	Final	8.4	8.4	8.5	8.5	8.4	8.5	
Conductivity µS	Final	544	546	608	612	564	562	

Table of Random Permutations of 16**C.dubia Test ID#****16-180a**

7	12	15	15	1	2	7	16	10	2	14	15	7	13	13	10	6	1	8	10
13	3	8	16	7	10	11	10	13	5	11	7	13	16	7	7	5	13	2	14
3	1	4	5	14	13	3	14	9	13	13	2	9	15	6	2	8	4	5	8
11	8	16	14	15	6	2	6	2	16	8	5	12	3	9	13	4	3	10	4
14	9	1	6	3	9	14	13	8	6	5	8	14	7	3	15	13	11	4	7
2	16	10	13	5	5	13	2	11	7	3	12	5	14	12	16	2	2	9	15
4	6	13	7	2	15	1	9	1	4	7	10	6	9	11	9	7	6	16	11
6	14	6	10	4	14	4	15	3	3	4	16	2	6	5	1	12	10	6	9
10	15	2	1	13	12	16	3	4	8	10	1	15	5	14	12	14	12	3	2
12	10	7	12	9	11	9	8	12	14	15	4	11	8	16	8	9	14	14	1
15	7	5	2	10	7	8	12	6	15	6	13	16	12	15	4	11	8	12	6
16	2	11	8	8	8	15	5	16	1	1	9	8	1	8	14	16	5	13	5
9	13	14	3	6	4	10	11	5	12	9	3	10	4	4	3	10	9	1	3
8	11	9	4	11	3	12	7	7	10	12	14	3	10	1	6	15	16	15	12
1	5	12	11	16	16	5	4	14	9	16	11	1	2	10	5	1	15	7	13
5	4	3	9	12	1	6	1	15	11	2	6	4	11	2	11	3	7	11	16
rep conc																			
11	8	16	5	5	13	1	13	2	16	14	12	9	8	7	5	13	3	13	3
2	2	8	8	14	16	4	3	8	11	10	14	15	1	2	11	4	5	15	9
6	13	2	13	6	5	9	15	11	10	12	6	16	15	16	9	10	12	16	15
14	12	4	16	16	11	14	10	5	12	3	3	12	14	15	13	6	4	1	16
8	6	3	9	4	10	6	4	16	2	2	9	8	16	4	6	5	15	7	8
9	15	12	10	3	2	12	6	1	15	4	13	7	7	9	12	14	8	8	11
3	10	11	12	13	12	5	11	7	8	9	5	14	11	10	1	3	13	3	5
16	1	13	14	8	14	15	5	3	7	11	15	6	12	5	7	11	1	14	4
1	14	14	2	9	15	16	14	6	14	7	8	3	13	11	8	7	7	12	7
4	4	6	4	12	3	11	8	15	9	8	1	13	6	3	3	15	9	9	12
15	5	1	11	10	6	3	7	10	5	5	11	10	10	12	15	16	14	5	2
5	3	5	6	7	7	13	2	14	3	16	4	5	5	13	4	9	16	2	6
12	7	15	15	15	9	8	12	12	13	15	10	1	4	6	16	2	6	11	1
10	11	10	3	2	4	2	1	4	6	6	7	11	9	14	10	8	11	4	13
7	9	7	7	11	1	7	16	13	1	13	2	4	2	1	2	12	2	10	14
13	16	9	1	1	8	10	9	9	4	1	16	2	3	8	14	1	10	6	10
1	6	7	4	8	6	5	2	8	15	4	6	6	1	4	5	7	13	2	10
9	15	11	3	11	15	9	10	1	3	8	2	15	7	9	8	16	1	14	3
10	16	4	5	12	9	16	11	7	1	7	16	11	8	3	3	12	2	3	4
4	14	1	9	5	5	4	13	6	8	15	5	12	5	7	16	5	11	8	1
7	3	13	14	15	2	1	14	16	5	14	9	2	16	1	12	6	14	4	13
16	11	2	1	14	16	6	9	3	4	16	14	3	15	11	11	3	9	12	5
3	10	16	16	13	7	13	1	11	14	9	10	16	2	10	2	10	7	10	16
11	13	9	13	4	13	8	3	5	13	10	12	5	12	5	14	13	16	5	6
15	2	3	12	9	12	2	4	13	10	3	13	14	4	2	1	14	8	6	12
14	1	14	6	10	1	3	12	4	2	2	4	13	3	16	9	9	3	7	14
13	12	5	11	3	11	15	8	2	7	11	7	8	14	6	4	4	4	15	11
12	5	10	7	2	14	7	15	14	16	13	1	9	10	12	10	11	10	9	8
8	9	8	10	6	4	11	7	10	11	6	8	4	9	8	15	8	6	11	9
2	7	6	2	1	8	10	6	15	12	1	11	7	11	13	6	1	15	13	15
6	4	15	8	16	10	14	16	9	6	12	3	10	6	14	7	2	12	16	7
5	8	12	15	7	3	12	5	12	9	5	15	1	13	15	13	15	5	1	2
13	4	10	4	16	13	16	13	5	3	6	14	1	16	8	7	2	3	3	12
5	14	4	6	8	2	15	1	13	14	16	4	15	4	3	12	12	1	4	7
2	2	2	15	14	16	9	12	16	6	10	15	14	9	10	1	14	8	8	16
7	12	15	8	12	3	5	14	7	12	5	13	16	1	7	5	11	2	9	3
6	9	7	14	9	14	10	11	15	11	12	1	12	12	14	16	3	11	11	8
14	5	16	7	10	8	11	8	14	13	7	11	6	3	11	4	4	6	6	9
15	11	8	9	7	12	8	7	1	15	9	3	3	7	13	11	10	4	5	1
11	6	6	1	4	1	3	16	12	5	4	9	13	13	6	8	15	9	1	14
4	10	3	16	2	11	7	9	6	9	1	8	4	11	5	2	16	10	12	4
1	8	1	13	1	15	4	4	11	4	2	16	5	8	1	9	5	12	16	6
9	7	14	2	6	4	14	10	9	8	15	10	7	10	9	10	6	14	10	11
12	1	9	10	15	5	2	15	10	2	14	2	8	2	4	13	8	5	15	5
3	3	12	11	5	9	6	6	3	10	13	12	9	6	2	15	7	15	7	13
10	15	11	5	13	7	12	5	2	7	11	5	10	15	12	3	1	13	13	10
8	13	13	3	3	10	13	2	4	1	8	6	11	14	15	6	9	16	2	2
16	16	5	12	11	6	1	3	8	16	3	7	2	5	16	14	13	7	14	15

Ceriodaphnia dubia

Culture Chart

Brood mother source: RMH019 - A5

Brood mother source: RMH019-AS Source's brood size: 17 (Qty.)

Lot # Cd16 (RMH 027) A

Specialty Minerals, Z-8-16

Y = neonates present, and criterion has been met: ≥ 20 neonates produced in total by 3rd brood.

N = no neonates

2B = two broods present. **2Y** = two broods and criterion met: ≥ 20 neos. by 3rd brood.

X = brood mother dead ae = aborted eggs

✓ or P = neonates present after renewal on previous day (see time in log)

A→ = acceptable for acute testing only

T# = neonates used in test; replicate number of test noted (and brood counted)

acc = if acclimated H₂O type used w/ renewal this day

Test organism collection

Tray diagram
used?

Project #	Symbols (✓ / P) (Y/N)		used?	Time period, neonates released	Collection date / time
0044739	T	-	Y	2-7-16 / 1940 → 2240	2-8-16 / 1200
0895201	(T)	-	Y	2-7-16 / 1940 → 2240	2-8-16 / 1200
	T				
	T				
	T				
	T				

NEW ENGLAND BIOASSAY TOXICITY DATA FORM
CHRONIC COVER SHEET

CLIENT: Specialty Minerals, Inc.
ADDRESS: 260 Columbia Street
Adams, MA 01220
SAMPLE TYPE: Industrial Effluent
DILUTION WATER: Moderately Hard Synthetic

P.promelas TEST ID # 16-180b
COC # c36-1286/87
PROJECT # 05.0044739.00

VERTEBRATES

TEST SET UP (TECH INIT) CW
TEST SPECIES *Pimephales promelas*
NEB LOT# Pp16(2-8)
AGE < 24 hours
TEST SOLUTION VOLUME (mls) 400
NO. ORGANISMS PER TEST CHAMBER 10
NO. ORGANISMS PER CONCENTRATION 40

Laboratory Control Water (MHRMF)

Batch Number	Hardness mg/L CaCO ₃	Alkalinity mg/L CaCO ₃
C36-MH001	88	60

	DATE	TIME
TEST START:	2/8/16	1345
TEST END:	2/15/16	1154

Results of *Pimephales promelas* Chronic Test

95% Confidence
Limits

48 Hour LC50	>100%	100%±∞
7 Day LC50	<25%*	N/A
Survival NOEC	<6.25%	
Survival LOEC	6.25%	
Growth NOEC	<6.25%*	
Growth LOEC	6.25%*	
Growth IC ₂₅	>100%	

NOEC: NO OBSERVABLE EFFECT CONCENTRATION LOEC: LOWEST OBSERVABLE EFFECT CONCENTRATION

Comments: * See note on page 7 of report

REVIEWD BY: mhs DATE: 2/25/16

**NEB'S SURVIVAL DATA SHEET FOR FATHEAD MINNOW LARVAL
SURVIVAL AND GROWTH TEST**

FACILITY NAME & ADDRESS: <u>Specialty Minerals, Inc., 260 Columbia Street, Adams, MA 01220</u>								
NEB PROJECT NUMBER:	05.0044739.00	TEST NUMBER:	16-180b	COC #	c36-1286/87			
TEST ORGANISM:	<u>Pimephales promelas</u>			AGE:	<24 hours	Lot #	Pp16(2-8)	
START DATE:	2/8/16	TIME:	1345	END DATE:	2/15/16	TIME:	1154	

Effluent Concentration	Replicate Number	Number of Survivors								
		Day								
		0	1	2	3	4	5	6	7	Remarks
	ANALYST	CW	KO	CW	KO	MV	CW	CW	KO	
NEB Lab Synthetic Diluent	A	10	10	10	10	10	10	10	10	
	B	10	10	10	10	10	10	10	10	
	C	10	10	10	10	10	10	10	10	
	D	10	10	10	10	10	10	10	10	
Hoosic River Control	A	10	10	10	10	9	7	6	6	
	B	10	10	10	10	10	10	10	10	
	C	10	10	10	9	8	8	8	8	
	D	10	10	10	10	10	10	10	10	
6.25%	A	10	10	9	8	7	7	7	7	
	B	10	10	10	7	8	5	5	5	
	C	10	10	10	10	10	10	10	9	
	D	10	10	10	9	8	8	8	8	
12.5%	A	10	10	10	5	5	5	5	5	
	B	10	10	10	2	2	2	2	2	
	C	10	10	10	10	10	10	10	10	
	D	10	10	10	7	7	7	7	7	
25%	A	10	10	9	4	4	4	4	4	
	B	10	10	10	5	5	5	5	5	
	C	10	10	10	8	5	5	5	5	
	D	10	10	9	4	3	3	3	3	
27.17%	A	10	10	10	8	8	8	8	7	
	B	10	10	10	9	9	9	9	8	
	C	10	10	10	9	8	8	8	7	
	D	10	10	10	9	7	7	6	6	
50%	A	10	10	10	7	7	7	7	7	
	B	10	10	9	9	9	9	9	9	
	C	10	10	10	7	7	7	7	7	
	D	10	10	9	7	6	6	6	6	

D.O. concentration fell below 4.0 mg/L _____
 All test solutions were aerated at <100 bubbles/minute as of _____

NEB'S SURVIVAL DATA SHEET FOR FATHEAD MINNOW LARVAL SURVIVAL AND GROWTH TEST

FACILITY NAME & ADDRESS: Specialty Minerals, Inc., 260 Columbia Street, Adams, MA 01220
NEB PROJECT NUMBER: 05.0044739.00 TEST NUMBER: 16-180b COC # c36-1286/87
TEST ORGANISM: *Pimephales promelas* AGE: <24 hours Lot # Pp16(2-8)
START DATE: 2/8/16 TIME: 1345 END DATE: 2/15/16 TIME: 1154

NEW ENGLAND BIOASSAY OBSERVATION DATA FORM

Client: Specialty Minerals, Inc.

Test Species: Pimephales promelas

Test ID: 16-180b

Sample: Effluent

Test Date: 2/8/16

Project # 05.0044739.00

Concentration or Dilution	Number of Live Organisms	All organisms appear healthy and normal unless noted			
		Day	3	Observations	Date: 2/11/16 Technician: KO
Synth Dil	39				
River Control	39				1 dead in rep C. No fungus.
6.25%	34				1 dead in rep A, 3 dead in rep B, 1 dead in rep D. No fungus.
12.5%	24				5 dead in rep A, 8 dead in rep B, 3 dead in rep D. No fungus.
25%	21				5 dead in rep A, 5 dead in rep B, 2 dead in rep C, 5 dead in rep D. With fungus.
27.17%	35				2 dead in rep A, 1 dead in rep B, 1 dead in rep C, 1 dead in rep D. No fungus.
50%	30				3 dead in rep A, 3 dead in rep C, 2 dead in rep D. No fungus.
100%	32				1 dead in rep A, 5 dead in rep B, 1 dead in rep C. With fungus.
		Day	4	Observations	Date: 2/12/16 Technician: MV
Synth Dil	40				
River Control	37				1 dead in reps a+c with fungus
6.25%	30				1 dead in reps A+D, 2 dead in rep b no fungus
12.5%	24				
25%	17				3 dead in rep c, 1 dead in rep d no fungus
27.17%	32				1 dead rep c, 2 dead rep d no fungus
50%	29				1 dead rep d no fungus
100%	29				1 dead in reps a,b, and c no fungus

NEW ENGLAND BIOASSAY OBSERVATION DATA FORM

Client: Specialty Minerals, Inc.

Test Species: Pimephales promelas

Test ID: 16-180b

Sample: Effluent

Test Date: 2/8/16

Project # 05.0044739.00

Concentration or Dilution	Number of Live Organisms	All organisms appear healthy and normal unless noted				
		Day	5	Observations	Date:	2/13/16 Technician: CW
Synth Dil	40					
River Control	35					2 dead in Rep A with fungus
6.25%	30					
12.5%	24					
25%	17					
27.17%	32					
50%	29					
100%	29					
		Day	6	Observations	Date:	2/14/16 Technician: CW
Synth Dil	40					
River Control	34					1 dead in Rep A with fungus
6.25%	30					
12.5%	24					
25%	17					
27.17%	31					1 dead in Rep D with fungus
50%	29					
100%	28					1 dead in Rep A with fungus

NEW ENGLAND BIOASSAY OBSERVATION DATA FORM

Client: Specialty Minerals, Inc.

Test Species: Pimephales promelas

Test ID: 16-180b

Sample: Effluent

Test Date: 2/8/16

Project # 05.0044739.00

Concentration or Dilution	Number of Live Organisms	All organisms appear healthy and normal unless noted			
		Day	7	Observations	Date: 2/15/16 Technician: KO
Synth Dil	40				
River Control	34				
6.25%	29			1 dead in rep C, no fungus.	
12.5%	24				
25%	17				
27.17%	28			1 dead in rep A, 1 dead in rep B, 1 dead in rep C. no fungus	
50%	29				
100%	28				
		Day	Observations	Date:	Technician:
Synth Dil					
River Control					
6.25%					
12.5%					
25%					
27.17%					
50%					
100%					

NEW ENGLAND BIOASSAY WEIGHT DATA FOR FATHEAD MINNOW LARVAL SURVIVAL AND GROWTH TEST

FACILITY NAME & ADDRESS:	Specialty Minerals, Inc., 260 Columbia Street, Adams, MA 01220		
NEB PROJECT #	05.0044739.00	NEB TEST NUMBER:	16-180b
TEST START DATE	2/8/16	WEIGHING DATE:	2/16/16
TEST END DATE	2/15/16		
DRYING TEMPERATURE (°C)	100 ± 4	DRYING TIME:	minimum 6 hours
ANALYST-INITIAL WEIGHTS	PD	ANALYST-FINAL WEIGHTS	MV
Effluent Concentration	Replicate Number	A Weight of boat (mg)	B Dry Weight: Foil and Larvae (mg)
NEB Lab Synthetic Diluent	A	934.86	942.17
	B	928.56	935.67
	C	932.32	939.17
	D	928.26	935.76
Hoosic River Control	A	933.75	939.31
	B	937.21	944.37
	C	940.35	947.31
	D	932.66	939.78
6.25%	A	935.53	942.09
	B	933.12	939.09
	C	931.43	938.92
	D	935.84	942.48
12.5%	A	934.82	940.04
	B	940.08	944.33
	C	925.34	932.16
	D	937.60	944.21
25%	A	929.60	934.02
	B	925.32	931.30
	C	930.45	935.22
	D	932.86	936.64
27.17%	A	931.21	938.45
	B	933.18	940.81
	C	930.52	938.25
	D	934.68	941.36
50%	A	934.71	941.45
	B	937.24	945.25
	C	936.28	942.52
	D	940.27	947.40
100%	A	936.08	942.58
	B	932.67	937.57
	C	940.49	946.97
	D	934.98	942.12

CETIS Analytical Report

Report Date: 17 Feb-16 14:57 (p 1 of 5)
 Test Code: 16-180b | 19-5175-5216

Fathead Minnow 7-d Larval Survival and Growth Test						New England Bioassay												
Analysis ID:	10-0686-1010	Endpoint:	2d Survival Rate				CETIS Version:	CETISv1.8.8										
Analyzed:	17 Feb-16 14:49	Analysis:	Linear Interpolation (ICPIN)				Official Results:	Yes										
Batch ID:	04-9573-5679	Test Type:	Growth-Survival (7d)				Analyst:											
Start Date:	08 Feb-16 13:45	Protocol:	EPA/821/R-02-013 (2002)				Diluent:	Laboratory Water										
Ending Date:	15 Feb-16 11:54	Species:	Pimephales promelas				Brine:	Not Applicable										
Duration:	6d 22h	Source:	In-House Culture				Age:	<24h										
Sample ID:	05-1663-1739	Code:	1ECB2CBB				Client:	Specialty Minerals, Inc.										
Sample Date:	08 Feb-16 06:38	Material:	Not Applicable				Project:											
Receive Date:	08 Feb-16 11:20	Source:	Specialty Minerals				Station:											
Sample Age:	7h																	
Linear Interpolation Options																		
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method													
Log(X)	Linear	773436	200	Yes	Two-Point Interpolation													
Point Estimates																		
Level	95% LCL	95% UCL																
LC50	>100	N/A																
2d Survival Rate Summary						Calculated Variate(A/B)												
Group	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B							
0	Dilution Water	4	1	1	1	0	0	0.0%	0.0%	40	40							
6.25		4	0.975	0.9	1	0.025	0.05	5.13%	2.5%	39	40							
12.5		4	1	1	1	0	0	0.0%	0.0%	40	40							
25		4	0.95	0.9	1	0.02887	0.05773	6.08%	5.0%	38	40							
27.1		4	1	1	1	0	0	0.0%	0.0%	40	40							
50		4	0.95	0.9	1	0.02887	0.05773	6.08%	5.0%	38	40							
100		4	0.975	0.9	1	0.025	0.05	5.13%	2.5%	39	40							
2d Survival Rate Detail																		
Group	Control Type	Rep 1	Rep 2	Rep 3	Rep 4													
0	Dilution Water	1	1	1	1													
6.25		0.9	1	1	1													
12.5		1	1	1	1													
25		0.9	1	1	0.9													
27.1		1	1	1	1													
50		1	0.9	1	0.9													
100		1	1	0.9	1													
2d Survival Rate Binomials																		
Group	Control Type	Rep 1	Rep 2	Rep 3	Rep 4													
0	Dilution Water	10/10	10/10	10/10	10/10													
6.25		9/10	10/10	10/10	10/10													
12.5		10/10	10/10	10/10	10/10													
25		9/10	10/10	10/10	9/10													
27.1		10/10	10/10	10/10	10/10													
50		10/10	9/10	10/10	9/10													
100		10/10	10/10	9/10	10/10													

CETIS Analytical Report

Report Date: 17 Feb-16 14:57 (p 2 of 5)
Test Code: 16-180b | 19-5175-5216

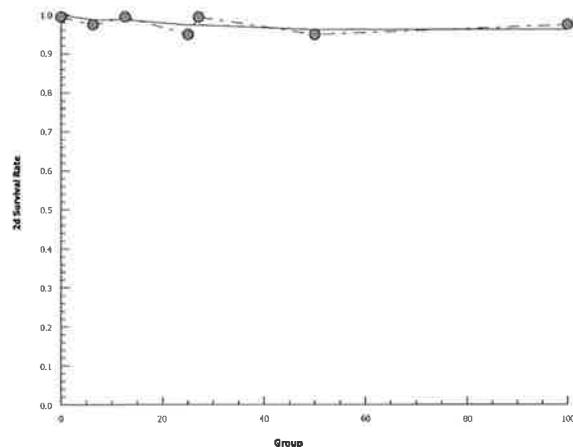
Fathead Minnow 7-d Larval Survival and Growth Test

New England Bioassay

Analysis ID: 10-0686-1010 Endpoint: 2d Survival Rate
Analyzed: 17 Feb-16 14:49 Analysis: Linear Interpolation (ICPIN)

CETIS Version: CETISv1.8.8
Official Results: Yes

Graphics



CETIS Analytical Report

Report Date:

17 Feb-16 14:57 (p 3 of 5)

Test Code:

16-180b | 19-5175-5216

Fathead Minnow 7-d Larval Survival and Growth Test**New England Bioassay**

Analysis ID: 06-7165-5806 **Endpoint:** 7d Survival Rate
Analyzed: 17 Feb-16 14:49 **Analysis:** Linear Interpolation (ICPIN) **CETIS Version:** CETISv1.8.8
Official Results: Yes

Batch ID: 04-9573-5679 **Test Type:** Growth-Survival (7d)
Start Date: 08 Feb-16 13:45 **Protocol:** EPA/821/R-02-013 (2002)
Ending Date: 15 Feb-16 11:54 **Species:** Pimephales promelas
Duration: 6d 22h **Source:** In-House Culture **Analyst:**
Diluent: Laboratory Water
Brine: Not Applicable
Age: <24h

Sample ID: 05-1663-1739 **Code:** 1ECB2CBB **Client:** Specialty Minerals, Inc.
Sample Date: 08 Feb-16 06:38 **Material:** Not Applicable **Project:**
Receive Date: 08 Feb-16 11:20 **Source:** Specialty Minerals
Sample Age: 7h **Station:**

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	767138	200	Yes	Two-Point Interpolation

Point Estimates

Level	95% LCL	95% UCL
LC50	>100	N/A

7d Survival Rate Summary**Calculated Variate(A/B)**

Group	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	4	1	1	1	0	0	0.0%	0.0%	40	40
6.25		4	0.725	0.5	0.9	0.08539	0.1708	23.56%	27.5%	29	40
12.5		4	0.6	0.2	1	0.1683	0.3367	56.11%	40.0%	24	40
25		4	0.425	0.3	0.5	0.04787	0.09574	22.53%	57.5%	17	40
27.1		4	0.7	0.6	0.8	0.04082	0.08165	11.66%	30.0%	28	40
50		4	0.725	0.6	0.9	0.06292	0.1258	17.36%	27.5%	29	40
100		4	0.7	0.4	1	0.1225	0.2449	34.99%	30.0%	28	40

7d Survival Rate Detail

Group	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1	1	1	1
6.25		0.7	0.5	0.9	0.8
12.5		0.5	0.2	1	0.7
25		0.4	0.5	0.5	0.3
27.1		0.7	0.8	0.7	0.6
50		0.7	0.9	0.7	0.6
100		0.7	0.4	0.7	1

7d Survival Rate Binomials

Group	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	10/10	10/10	10/10	10/10
6.25		9/10	10/10	10/10	10/10
12.5		10/10	10/10	10/10	10/10
25		9/10	10/10	10/10	9/10
27.1		10/10	10/10	10/10	10/10
50		10/10	9/10	10/10	9/10
100		10/10	10/10	9/10	10/10

CETIS Analytical Report

Report Date: 17 Feb-16 14:57 (p 4 of 5)
Test Code: 16-180b | 19-5175-5216

Fathead Minnow 7-d Larval Survival and Growth Test

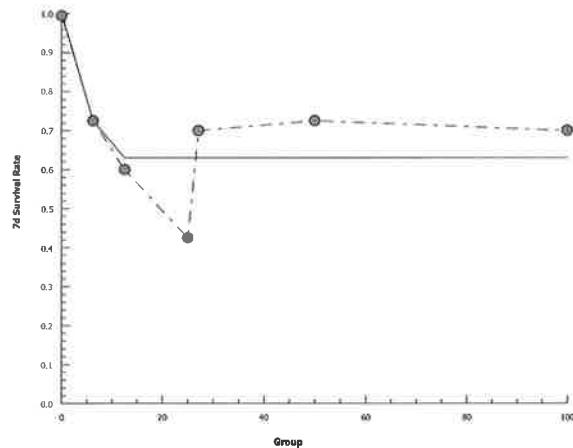
New England Bioassay

Analysis ID: 06-7165-5806
Analyzed: 17 Feb-16 14:49

Endpoint: 7d Survival Rate
Analysis: Linear Interpolation (ICPIN)

CETIS Version: CETISv1.8.8
Official Results: Yes

Graphics



CETIS Analytical Report

Report Date:

17 Feb-16 14:57 (p 1 of 2)

Test Code:

16-180b | 19-5175-5216

Fathead Minnow 7-d Larval Survival and Growth Test

New England Bioassay

Analysis ID:	20-9640-9824	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.8
Analyzed:	17 Feb-16 14:49	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes
Batch ID:	04-9573-5679	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	08 Feb-16 13:45	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	15 Feb-16 11:54	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	In-House Culture	Age:	<24h
Sample ID:	05-1663-1739	Code:	1ECB2CBB	Client:	Specialty Minerals, Inc.
Sample Date:	08 Feb-16 06:38	Material:	Not Applicable	Project:	
Receive Date:	08 Feb-16 11:20	Source:	Specialty Minerals		
Sample Age:	7h	Station:			

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	25.8%	<6.25	6.25	NA	

Dunnett Multiple Comparison Test

Control	vs	Group	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)
Dilution Water		6.25*	2.478	2.448	0.374	6	0.0471	CDF	Significant Effect
		12.5*	3.264	2.448	0.374	6	0.0090	CDF	Significant Effect
		25*	4.6	2.448	0.374	6	0.0004	CDF	Significant Effect
		27.1*	2.735	2.448	0.374	6	0.0280	CDF	Significant Effect
		50*	2.503	2.448	0.374	6	0.0448	CDF	Significant Effect
		100*	2.566	2.448	0.374	6	0.0396	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)
Between	1.051127	0.1751879	6	3.748	0.0108	Significant Effect
Error	0.9814838	0.04673732	21			
Total	2.032611		27			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α :1%)
Variances	Mod Levene Equality of Variance	2.001	3.812	0.1110	Equal Variances
Variances	Levene Equality of Variance	2.364	3.812	0.0666	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9319	0.8975	0.0687	Normal Distribution

7d Survival Rate Summary

Group	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	4	1	1	1	1	1	1	0	0.0%	0.0%
6.25		4	0.725	0.4532	0.9968	0.75	0.5	0.9	0.08539	23.56%	27.5%
12.5		4	0.6	0.06431	1	0.6	0.2	1	0.1683	56.11%	40.0%
25		4	0.425	0.2727	0.5773	0.45	0.3	0.5	0.04787	22.53%	57.5%
27.1		4	0.7	0.5701	0.8299	0.7	0.6	0.8	0.04082	11.66%	30.0%
50		4	0.725	0.5248	0.9252	0.7	0.6	0.9	0.06292	17.36%	27.5%
100		4	0.7	0.3102	1	0.7	0.4	1	0.1225	34.99%	30.0%

Angular (Corrected) Transformed Summary

Group	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.0%	0.0%
6.25		4	1.033	0.7213	1.345	1.049	0.7854	1.249	0.09799	18.97%	26.83%
12.5		4	0.9131	0.281	1.545	0.8883	0.4636	1.412	0.1986	43.5%	35.34%
25		4	0.7088	0.5523	0.8652	0.7351	0.5796	0.7854	0.04916	13.87%	49.8%
27.1		4	0.9939	0.8502	1.138	0.9912	0.8861	1.107	0.04515	9.09%	29.61%
50		4	1.029	0.7833	1.275	0.9912	0.8861	1.249	0.0773	15.02%	27.1%
100		4	1.02	0.5444	1.495	0.9912	0.6847	1.412	0.1494	29.3%	27.78%

CETIS Analytical Report

Report Date:

17 Feb-16 14:57 (p 2 of 2)

Test Code:

16-180b | 19-5175-5216

Fathead Minnow 7-d Larval Survival and Growth Test**New England Bioassay**

Analysis ID: 20-9640-9824

Endpoint: 7d Survival Rate

CETIS Version: CETISv1.8.8

Analyzed: 17 Feb-16 14:49

Analysis: Parametric-Control vs Treatments

Official Results: Yes

7d Survival Rate Detail

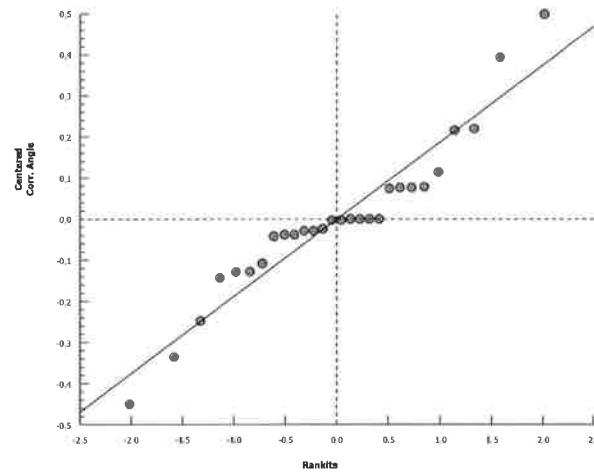
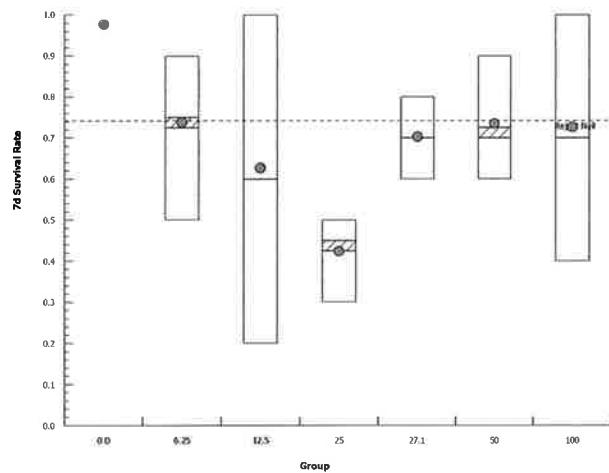
Group	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1	1	1	1
6.25		0.7	0.5	0.9	0.8
12.5		0.5	0.2	1	0.7
25		0.4	0.5	0.5	0.3
27.1		0.7	0.8	0.7	0.6
50		0.7	0.9	0.7	0.6
100		0.7	0.4	0.7	1

Angular (Corrected) Transformed Detail

Group	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.412	1.412	1.412	1.412
6.25		0.9912	0.7854	1.249	1.107
12.5		0.7854	0.4636	1.412	0.9912
25		0.6847	0.7854	0.7854	0.5796
27.1		0.9912	1.107	0.9912	0.8861
50		0.9912	1.249	0.9912	0.8861
100		0.9912	0.6847	0.9912	1.412

7d Survival Rate Binomials

Group	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	10/10	10/10	10/10	10/10
6.25		7/10	5/10	9/10	8/10
12.5		5/10	2/10	10/10	7/10
25		4/10	5/10	5/10	3/10
27.1		7/10	8/10	7/10	6/10
50		7/10	9/10	7/10	6/10
100		7/10	4/10	7/10	10/10

Graphics

CETIS Analytical Report

Report Date: 17 Feb-16 14:57 (p 5 of 5)
 Test Code: 16-180b | 19-5175-5216

Fathead Minnow 7-d Larval Survival and Growth Test

New England Bioassay

Analysis ID:	07-1320-4256	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.8
Analyzed:	17 Feb-16 14:50	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	04-9573-5679	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	08 Feb-16 13:45	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	15 Feb-16 11:54	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	In-House Culture	Age:	<24h
Sample ID:	05-1663-1739	Code:	1ECB2CBB	Client:	Specialty Minerals, Inc.
Sample Date:	08 Feb-16 06:38	Material:	Not Applicable	Project:	
Receive Date:	08 Feb-16 11:20	Source:	Specialty Minerals		
Sample Age:	7h	Station:			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1287852	200	Yes	Two-Point Interpolation

Point Estimates

Level	95% LCL	95% UCL
IC25	>100	N/A
IC50	>100	N/A

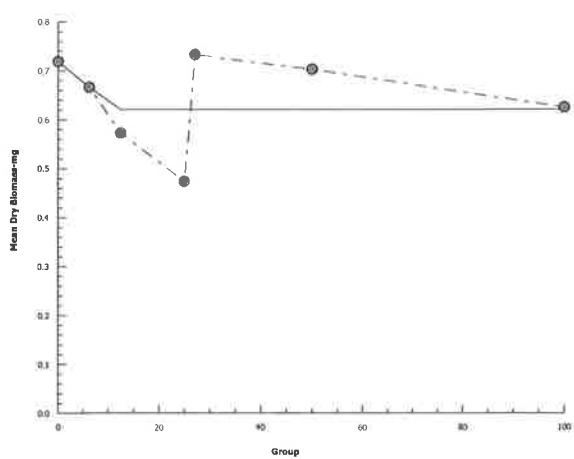
Mean Dry Biomass-mg Summary

Group	Control Type	Count	Calculated Variate						
			Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	4	0.7192	0.685	0.75	0.01392	0.02784	3.87%	0.0%
6.25		4	0.6665	0.597	0.749	0.03129	0.06259	9.39%	7.33%
12.5		4	0.5725	0.425	0.682	0.06064	0.1213	21.18%	20.4%
25		4	0.4738	0.378	0.598	0.04621	0.09242	19.51%	34.13%
27.1		4	0.732	0.668	0.773	0.02381	0.04762	6.51%	-1.77%
50		4	0.703	0.624	0.801	0.0374	0.0748	10.64%	2.26%
100		4	0.6255	0.49	0.714	0.0477	0.09539	15.25%	13.03%

Mean Dry Biomass-mg Detail

Group	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.731	0.711	0.685	0.75
6.25		0.656	0.597	0.749	0.664
12.5		0.522	0.425	0.682	0.661
25		0.442	0.598	0.477	0.378
27.1		0.724	0.763	0.773	0.668
50		0.674	0.801	0.624	0.713
100		0.65	0.49	0.648	0.714

Graphics



Concentration	Rep	Final Weight (mg)	Initial Weight (mg)	Total Weight (mg)	Average per fish (mg)	Mean fish weight (mg)	Standard Deviation
NEB Lab Synthetic Diluent	1	942.17	934.86	7.31	0.731	0.7192	0.027837325
	2	935.67	928.56	7.11	0.711		
	3	939.17	932.32	6.85	0.685		
	4	935.76	928.26	7.50	0.750		
Hoosic River Control	1	939.31	933.75	5.56	0.556	0.6700	0.076489651
	2	944.37	937.21	7.16	0.716		
	3	947.31	940.35	6.96	0.696		
	4	939.78	932.66	7.12	0.712		
6.25%	1	942.09	935.53	6.56	0.656	0.6665	0.062591267
	2	939.09	933.12	5.97	0.597		
	3	938.92	931.43	7.49	0.749		
	4	942.48	935.84	6.64	0.664		
12.5%	1	940.04	934.82	5.22	0.522	0.5725	0.121283415
	2	944.33	940.08	4.25	0.425		
	3	932.16	925.34	6.82	0.682		
	4	944.21	937.60	6.61	0.661		
25%	1	934.02	929.60	4.42	0.442	0.4737	0.092420687
	2	931.30	925.32	5.98	0.598		
	3	935.22	930.45	4.77	0.477		
	4	936.64	932.86	3.78	0.378		
27.17%	1	938.45	931.21	7.24	0.724	0.7320	0.047616524
	2	940.81	933.18	7.63	0.763		
	3	938.25	930.52	7.73	0.773		
	4	941.36	934.68	6.68	0.668		
50%	1	941.45	934.71	6.74	0.674	0.7030	0.074801961
	2	945.25	937.24	8.01	0.801		
	3	942.52	936.28	6.24	0.624		
	4	947.40	940.27	7.13	0.713		
100%	1	942.58	936.08	6.50	0.650	0.6255	0.095392173
	2	937.57	932.67	4.90	0.490		
	3	946.97	940.49	6.48	0.648		
	4	942.12	934.98	7.14	0.714		

NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS:		Specialty Minerals, Inc., 260 Columbia Street, Adams, MA 01220					
NEB PROJECT NUMBER:		05.0044739.00			TEST ORGANISM		<i>Pimephales promelas</i>
DILUTION WATER SOURCE:		Moderately Hard Synthetic			START DATE:		2/8/16 TIME: 1345
ANALYST	CW	KO	PD	KO	MV	MV	MV
NEB Lab Synthetic Diluent	1	2	3	4	5	6	7
Temp °C Initial	25.8	25.7	24.0	25.5	25.9	25.7	25.3
D.O. mg/L Initial	8.0	8.4	8.5	8.3	8.3	8.4	8.5
pH s.u. Initial	8.0	7.9	7.9	8.0	7.8	7.8	7.7
Conductivity µS Initial	321	320	321	320	321	320	319
Temp °C Final	25.3	24.9	25.1	24.8	24.6	24.0	24.0
D.O. mg/L Final	7.5	7.3	6.9	7.4	7.6	8.0	7.8
pH s.u. Final	7.6	7.2	6.7	7.2	7.4	7.6	7.6
Conductivity µS Final	336	338	336	344	362	367	349
Hoosic River Control	1	2	3	4	5	6	7
Temp °C Initial	25.9	25.5	24.6	26.0	25.9	26.0	26.0
D.O. mg/L Initial	11.2	9.1	11.5	9.7	9.3	8.4	8.4
pH s.u. Initial	7.9	7.7	7.8	7.7	7.7	7.8	8.0
Conductivity µS Initial	251	250	280	281	329	326	323
Temp °C Final	25.5	24.8	25.7	25.2	25.1	25.0	24.7
D.O. mg/L Final	7.5	7.0	7.0	7.4	7.4	7.7	7.3
pH s.u. Final	7.6	7.1	7.1	7.5	7.6	7.6	7.8
Conductivity µS Final	268	269	290	304	355	357	351
6.25%	1	2	3	4	5	6	7
Temp °C Initial	25.7	25.6	24.0	25.3	25.9	25.6	25.4
D.O. mg/L Initial	8.1	8.1	8.5	8.2	9.2	8.8	8.6
pH s.u. Initial	8.0	8.1	7.8	8.0	7.8	7.6	8.0
Conductivity µS Initial	332	334	336	335	338	335	335
Temp °C Final	25.6	24.8	24.9	24.7	24.7	25.0	24.3
D.O. mg/L Final	7.0	7.4	7.0	7.4	7.5	7.0	7.4
pH s.u. Final	7.6	7.2	7.3	7.5	7.5	7.5	7.8
Conductivity µS Final	344	352	350	363	374	371	367
12.5%	1	2	3	4	5	6	7
Temp °C Initial	25.6	25.6	24.0	25.2	25.8	25.9	25.8
D.O. mg/L Initial	8.1	8.1	8.5	8.2	8.4	8.3	8.3
pH s.u. Initial	8.0	8.1	7.8	8.0	7.9	7.9	8.0
Conductivity µS Initial	347	349	351	349	352	352	350
Temp °C Final	25.5	25.5	25.7	25.2	24.8	24.4	24.5
D.O. mg/L Final	6.8	6.7	7.0	7.3	7.3	7.3	7.6
pH s.u. Final	7.7	7.3	7.4	7.6	7.6	7.7	7.7
Conductivity µS Final	359	363	362	374	387	387	379

NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS:		Specialty Minerals, Inc., 260 Columbia Street, Adams, MA 01220						
NEB PROJECT NUMBER:		05.0044739.00		TEST ORGANISM		<i>Pimephales promelas</i>		
DILUTION WATER SOURCE:		Moderately Hard Synthetic			START DATE:	2/8/16	TIME: 1345	
25%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.7	25.6	24.1	25.1	25.6	25.9	25.7	
D.O. mg/L Initial	8.2	8.1	8.6	8.3	8.4	8.2	8.4	
pH s.u. Initial	7.9	8.0	7.8	8.0	7.8	7.8	8.0	
Conductivity µS Initial	373	372	378	377	385	382	382	
Temp °C Final	25.5	25.4	25.6	25.5	25.0	24.6	24.7	
D.O. mg/L Final	6.9	6.9	6.9	7.1	7.5	7.3	7.5	
pH s.u. Final	7.8	7.4	7.4	7.6	7.7	8.0	7.8	
Conductivity µS Final	386	389	390	400	418	412	404	
27.17%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.6	25.7	24.2	25.0	25.6	25.8	25.7	
D.O. mg/L Initial	8.2	8.1	8.6	8.4	8.4	8.3	8.5	
pH s.u. Initial	7.9	8.0	7.8	8.0	7.7	7.8	8.0	
Conductivity µS Initial	377	378	384	382	390	389	388	
Temp °C Final	25.7	25.2	25.6	25.1	25.1	25.2	24.7	
D.O. mg/L Final	7.1	6.9	6.9	7.2	7.4	7.4	7.0	
pH s.u. Final	7.8	7.5	7.5	7.7	7.7	7.8	7.8	
Conductivity µS Final	389	394	394	404	422	420	413	
50%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.5	25.7	24.2	24.7	25.6	25.6	25.7	
D.O. mg/L Initial	8.3	8.1	8.8	8.5	8.4	8.3	8.4	
pH s.u. Initial	7.8	8.0	7.7	7.9	7.8	7.8	7.9	
Conductivity µS Initial	430	428	439	438	450	449	449	
Temp °C Final	25.8	25.1	25.4	25.0	25.0	25.0	24.7	
D.O. mg/L Final	6.9	6.8	6.9	7.4	7.4	7.0	7.1	
pH s.u. Final	7.8	7.6	7.6	7.9	7.9	7.7	8.0	
Conductivity µS Final	439	446	450	462	485	482	479	
100%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.1	25.7	24.5	24.0	25.4	25.5	24.9	
D.O. mg/L Initial	9.4	8.4	9.7	9.5	8.6	8.5	9.0	
pH s.u. Initial	7.7	7.9	7.6	7.8	7.5	7.6	7.8	
Conductivity µS Initial	540	539	560	558	588	581	583	
Temp °C Final	25.2	25.2	25.3	25.0	24.8	24.7	24.4	
D.O. mg/L Final	7.2	6.9	6.9	7.5	7.6	7.4	7.5	
pH s.u. Final	8.1	7.8	7.7	8.0	8.0	8.0	8.2	
Conductivity µS Final	550	553	570	581	618	617	611	

Table of Random Permutations of 16**P.promelas Test ID#****16-180b**

7	12	15	15	1	2	7	16	10	2	14	15	7	13	13	10	6	1	8	10
13	3	8	16	7	10	11	10	13	5	11	7	13	16	7	7	5	13	2	14
3	1	4	5	14	13	3	14	9	13	13	2	9	15	6	2	8	4	5	8
11	8	16	14	15	6	2	6	2	16	8	5	12	3	9	13	4	3	10	4
14	9	1	6	3	9	14	13	8	6	5	8	14	7	3	15	13	11	4	7
2	16	10	13	5	5	13	2	11	7	3	12	5	14	12	16	2	2	9	15
4	6	13	7	2	15	1	9	1	4	7	10	6	9	11	9	7	6	16	11
6	14	6	10	4	14	4	15	3	3	4	16	2	6	5	1	12	10	6	9
10	15	2	1	13	12	16	3	4	8	10	1	15	5	14	12	14	12	3	2
12	10	7	12	9	11	9	8	12	14	15	4	11	8	16	8	9	14	14	1
15	7	5	2	10	7	8	12	6	15	6	13	16	12	15	4	11	8	12	6
16	2	11	8	8	8	15	5	16	1	1	9	8	1	8	14	16	5	13	5
9	13	14	3	6	4	10	11	5	12	9	3	10	4	4	3	10	9	1	3
8	11	9	4	11	3	12	7	7	10	12	14	3	10	1	6	15	16	15	12
1	5	12	11	16	16	5	4	14	9	16	11	1	2	10	5	1	15	7	13
5	4	3	9	12	1	6	1	15	11	2	6	4	11	2	11	3	7	11	16
11	8	16	5	5	13	1	13	2	16	14	12	9	8	7	5	13	3	13	3
2	2	8	8	14	16	4	3	8	11	10	14	15	1	2	11	4	5	15	9
6	13	2	13	6	5	9	15	11	10	12	6	16	15	16	9	10	12	16	15
14	12	4	16	16	11	14	10	5	12	3	3	12	14	15	13	6	4	1	16
8	6	3	9	4	10	6	4	16	2	2	9	8	16	4	6	5	15	7	8
9	15	12	10	3	2	12	6	1	15	4	13	7	7	9	12	14	8	8	11
3	10	11	12	13	12	5	11	7	8	9	5	14	11	10	1	3	13	3	5
16	1	13	14	8	14	15	5	3	7	11	15	6	12	5	7	11	1	14	4
1	14	14	2	9	15	16	14	6	14	7	8	3	13	11	8	7	7	12	7
4	4	6	4	12	3	11	8	15	9	8	1	13	6	3	3	15	9	9	12
15	5	1	11	10	6	3	7	10	5	5	11	10	10	12	15	16	14	5	2
5	3	5	6	7	7	13	2	14	3	16	4	5	5	13	4	9	16	2	6
12	7	15	15	15	9	8	12	12	13	15	10	1	4	6	16	2	6	11	1
10	11	10	3	2	4	2	1	4	6	6	7	11	9	14	10	8	11	4	13
7	9	7	7	11	1	7	16	13	1	13	2	4	2	1	2	12	2	10	14
13	16	9	1	1	8	10	9	9	4	1	16	2	3	8	14	1	10	6	10
1	6	7	4	8	6	5	2	8	15	4	6	6	1	4	5	7	13	2	10
9	15	11	3	11	15	9	10	1	3	8	2	15	7	9	8	16	1	14	3
10	16	4	5	12	9	16	11	7	1	7	16	11	8	3	3	12	2	3	4
4	14	1	9	5	5	4	13	6	8	15	5	12	5	7	16	5	11	8	1
7	3	13	14	15	2	1	14	16	5	14	9	2	16	1	12	6	14	4	13
16	11	2	1	14	16	6	9	3	4	16	14	3	15	11	11	3	9	12	5
3	10	16	16	13	7	13	1	11	14	9	10	16	2	10	2	10	7	10	16
11	13	9	13	4	13	8	3	5	13	10	12	5	12	5	14	13	16	5	6
15	2	3	12	9	12	2	4	13	10	3	13	14	4	2	1	14	8	6	12
14	1	14	6	10	1	3	12	4	2	2	4	13	3	16	9	9	3	7	14
13	12	5	11	3	11	15	8	2	7	11	7	8	14	6	4	4	4	15	11
12	5	10	7	2	14	7	15	14	16	13	1	9	10	12	10	11	10	9	8
8	9	8	10	6	4	11	7	10	11	6	8	4	9	8	15	8	6	11	9
2	7	6	2	1	8	10	6	15	12	1	11	7	11	13	6	1	15	13	15
6	4	15	8	16	10	14	16	9	6	12	3	10	6	14	7	2	12	16	7
5	8	12	15	7	3	12	5	12	9	5	15	1	13	15	13	15	5	1	2
rep conc																			
13	4	10	4	16	13	16	13	5	3	6	14	1	16	8	7	2	3	3	12
5	14	4	6	8	2	15	1	13	14	16	4	15	4	3	12	12	1	4	7
2	2	2	15	14	16	9	12	16	6	10	15	14	9	10	1	14	8	8	16
7	12	15	8	12	3	5	14	7	12	5	13	16	1	7	5	11	2	9	3
6	9	7	14	9	14	10	11	15	11	12	1	12	12	14	16	3	11	11	8
14	5	16	7	10	8	11	8	14	13	7	11	6	3	11	4	4	6	6	9
15	11	8	9	7	12	8	7	1	15	9	3	3	7	13	11	10	4	5	1
11	6	6	1	4	1	3	16	12	5	4	9	13	13	6	8	15	9	1	14
4	10	3	16	2	11	7	9	6	9	1	8	4	11	5	2	16	10	12	4
1	8	1	13	1	15	4	4	11	4	2	16	5	8	1	9	5	12	16	6
9	7	14	2	6	4	14	10	9	8	15	10	7	10	9	10	6	14	10	11
12	1	9	10	15	5	2	15	10	2	14	2	8	2	4	13	8	5	15	5
3	3	12	11	5	9	6	6	3	10	13	12	9	6	2	15	7	15	7	13
10	15	11	5	13	7	12	5	2	7	11	5	10	15	12	3	1	13	13	10
8	13	13	3	3	10	13	2	4	1	8	6	11	14	15	6	9	16	2	2
16	16	5	12	11	6	1	3	8	16	3	7	2	5	16	14	13	7	14	15

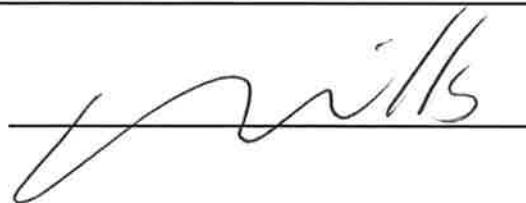
NEW ENGLAND BIOASSAY
INITIAL CHEMISTRY DATA

CLIENT:	Specialty Minerals, Inc.				
NEB JOB #	05.0044739.00				
TEST ID #	C.dubia	16-180a	P.promelas	16-180b	

DATE RECEIVED	2/8/16		2/10/16		2/12/16	
SAMPLE TYPE:	EFF #1	RIVER #1	EFF #2	RIVER #2	EFF #3	RIVER #3
COC #	C36-1286	C36-1287	C36-1310	C36-1311	C36-1340	C36-1341
pH (SU)	7.3	7.1	7.3	7.6	7.4	7.6
Temperature (°C)	2.8	1.4	2.7	2.0	2.9	1.4
Dissolved Oxygen (mg/L)	10.4	12.2	10.4	12.5	10.0	11.8
Conductivity (μmhos)	542	251	557	277	590	328
Salinity (ppt)	< 1	< 1	< 1	< 1	< 1	< 1
TRC - DPD (mg/L)	0.009	0.008	0.011	0.023	0.003	0.011
TRC - Amperometric (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A
Hardness (mg/L as CaCO ₃)	176	88	160	96	194	116
Alkalinity (mg/l as CaCO ₃)	150	75	160	75	180	100
Tech Initials	PD	PD	KO	KO	CW	CW

NOTE: NA = NOT APPLICABLE

Data Reviewed By:



Date Reviewed:

2/25/16



Thursday, February 11, 2016

Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Project ID: SPECIALTY MINERALS
Sample ID#s: BK62588 - BK62591

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Phyllis Shiller".

Phyllis Shiller

Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

February 11, 2016

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information

Matrix: WASTE WATER
Location Code: NEB
Rush Request: Standard
P.O.#: 21678

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date

Time

02/08/16 6:30
02/08/16 15:10

Laboratory Data

SDG ID: GBK62588

Phoenix ID: BK62588

Project ID: SPECIALTY MINERALS
Client ID: EFFLUENT 1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Aluminum	0.025	0.010	mg/L	1	02/10/16	LK	E200.7
Cadmium	< 0.0001	0.0001	mg/L	1	02/10/16	RS	SM3113B
Copper	< 0.002	0.002	mg/L	1	02/10/16	LK	E200.7
Hardness (CaCO ₃)	178	0.1	mg/L	1	02/10/16		E200.7
Nickel	< 0.001	0.001	mg/L	1	02/10/16	LK	E200.7
Lead	< 0.0003	0.0003	mg/L	1	02/10/16	RS	SM3113B
Zinc	< 0.002	0.002	mg/L	1	02/10/16	LK	E200.7
Alkalinity-CaCO ₃	165	5.0	mg/L	1	02/09/16		RWR/KDBSM2320B-97
Conductivity	551	5	umhos/cm	1	02/09/16		RWR/KDBSM2510B-97
Ammonia as Nitrogen	0.05	0.05	mg/L	1	02/10/16	WHM	E350.1
Tot. Diss. Solids	300	10	mg/L	1	02/09/16	KH	SM2540C-97
Tot. Org. Carbon	0.71	0.50	mg/L	1	02/09/16	RR/EG	SM5310CE415.1-00
Total Solids	300	10	mg/L	1	02/09/16	KH	SM2540B-97
Total Metals Digestion	Completed				02/09/16	AG	SW3050B

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director

February 11, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

February 11, 2016

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information

Matrix: WASTE WATER
Location Code: NEB
Rush Request: Standard
P.O.#: 21678

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date

Time

02/08/16

6:24

02/08/16

15:10

SDG ID: GBK62588

Phoenix ID: BK62589

Project ID: SPECIALTY MINERALS
Client ID: RECEIVING WATER 1

Laboratory Data

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Aluminum	0.032	0.010	mg/L	1	02/09/16	LK	E200.7
Cadmium	< 0.0001	0.0001	mg/L	1	02/10/16	RS	SM3113B
Copper	< 0.002	0.002	mg/L	1	02/09/16	LK	E200.7
Hardness (CaCO ₃)	89.7	0.1	mg/L	1	02/10/16		E200.7
Nickel	< 0.001	0.001	mg/L	1	02/09/16	LK	E200.7
Lead	< 0.0003	0.0003	mg/L	1	02/10/16	RS	SM3113B
Zinc	< 0.002	0.002	mg/L	1	02/10/16	EK	E200.7
Alkalinity-CaCO ₃	104	5.0	mg/L	1	02/09/16	RWR/KDBSM2320B-97	
Conductivity	229	5	umhos/cm	1	02/09/16	RWR/KDBSM2510B-97	
Ammonia as Nitrogen	< 0.05	0.05	mg/L	1	02/10/16	WHM	E350.1
pH	8.00	0.10	pH Units	1	02/09/16 05:07	RWR/KDBSM4500-H B-00	
Tot. Org. Carbon	1.7	0.50	mg/L	1	02/09/16	RR/EG	SM5310C/E415.1-00
Total Metals Digestion	Completed				02/09/16	AG	SW3050B

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director

February 11, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

February 11, 2016

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information

Matrix: WASTE WATER
Location Code: NEB
Rush Request: Standard
P.O.#: 21678

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date

Time

02/08/16 6:32

15:10

Laboratory Data

SDG ID: GBK62588

Phoenix ID: BK62590

Project ID: SPECIALTY MINERALS
Client ID: EFFLUENT GRAB 1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Chlorine Residual	< 0.02	0.02	mg/L	1	02/08/16 17:30	O	SM4500CLG-97
pH	7.90	0.10	pH Units	1	02/09/16 05:09	RWR/KDBSM4500-H B-00	

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for Chlorine is immediately. This Chlorine was performed in the laboratory and may be considered outside of hold-time.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director

February 11, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

February 11, 2016

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information

Matrix: WASTE WATER
Location Code: NEB
Rush Request: Standard
P.O.#: 21678

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date

Time

02/08/16 10:00
02/08/16 15:10

Laboratory Data

SDG ID: GBK62588

Phoenix ID: BK62591

Project ID: SPECIALTY MINERALS
Client ID: MHRCF LAB WATER

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Aluminum	< 0.010	0.010	mg/L	1	02/10/16	LK	E200.7
Cadmium	< 0.0001	0.0001	mg/L	1	02/10/16	RS	SM3113B
Copper	< 0.002	0.002	mg/L	1	02/10/16	LK	E200.7
Hardness (CaCO ₃)	93.8	0.1	mg/L	1	02/10/16		E200.7
Nickel	< 0.001	0.001	mg/L	1	02/10/16	LK	E200.7
Lead	< 0.0003	0.0003	mg/L	1	02/10/16	RS	SM3113B
Zinc	< 0.002	0.002	mg/L	1	02/10/16	LK	E200.7
Alkalinity-CaCO ₃	71.1	5.0	mg/L	1	02/09/16	RWR/KDBSM2320B-97	
Conductivity	318	5	umhos/cm	1	02/09/16	RWR/KDBSM2510B-97	
Ammonia as Nitrogen	< 0.05	0.05	mg/L	1	02/10/16	WHM	E350.1
pH	7.75	0.10	pH Units	1	02/10/16 07:18	RR/EG	SM4500-H B-00
Tot. Org. Carbon	< 0.50	0.50	mg/L	1	02/09/16	RR/EG	SM5310C/E415.1-00
Total Metals Digestion	Completed				02/09/16	AG	SW3050B

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director

February 11, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

February 11, 2016

QA/QC Data

SDG I.D.: GBK62588

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 334144 (mg/L), QC Sample No: BK61480 (BK62588, BK62589, BK62591)													
Cadmium - Water	BRL	0.0001	<0.0001	<0.0001	NC	102	105	2.9	114	117	2.6	75 - 125	20
QA/QC Batch 334388 (mg/L), QC Sample No: BK62580 (BK62588, BK62589, BK62591)													
Lead (Furnace) - Water	BRL	0.001	0.0003	<0.001	NC	104			101			75 - 125	30
QA/QC Batch 334473 (mg/L), QC Sample No: BK62589 (BK62589)													
<u>ICP Metals - Aqueous</u>													
Aluminum	BRL	0.010	0.032	0.031	NC	95.2			99.3			75 - 125	20
Copper	BRL	0.005	<0.002	<0.005	NC	98.4			103			75 - 125	20
Nickel	BRL	0.001	<0.001	<0.001	NC	101			104			75 - 125	20
Zinc	BRL	0.002	<0.002	<0.002	NC	98.3			101			75 - 125	20
QA/QC Batch 334486 (mg/L), QC Sample No: BK62591 (BK62588, BK62591)													
<u>ICP Metals - Aqueous</u>													
Aluminum	BRL	0.010	<0.010	<0.010	NC	99.4			100			75 - 125	20
Copper	BRL	0.005	<0.002	<0.005	NC	103			103			75 - 125	20
Nickel	BRL	0.001	<0.001	<0.001	NC	104			104			75 - 125	20
Zinc	BRL	0.002	<0.002	<0.002	NC	102			103			75 - 125	20



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

February 11, 2016

QA/QC Data

SDG I.D.: GBK62588

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 334445 (mg/L), QC Sample No: BK62073 (BK62588, BK62589, BK62591)													
Ammonia as Nitrogen	BRL	0.05	9.54	9.86	3.30	98.0			102			85 - 115	20
QA/QC Batch 334435 (mg/L), QC Sample No: BK62131 (BK62588)													
Tot. Diss. Solids	BRL	10	56	46	NC	99.0						85 - 115	20
QA/QC Batch 334436 (mg/L), QC Sample No: BK62455 (BK62588)													
Total Solids	BRL	10	5000	5000	0	98.0						85 - 115	20
QA/QC Batch 334399 (mg/L), QC Sample No: BK62484 (BK62590)													
Chlorine Residual	BRL	0.02	<0.02	<0.02	NC	97.0							
QA/QC Batch 334450 (mg/L), QC Sample No: BK62485 (BK62588, BK62589, BK62591)													
Total Organic Carbon	BRL	1.0	7.0	7.0	0	91.0			101			85 - 115	20
QA/QC Batch 334422 (mg/L), QC Sample No: BK62582 (BK62588, BK62589, BK62591)													
Alkalinity-CaCO ₃	BRL	5.0	8.3	9.4	NC	103						85 - 115	20
QA/QC Batch 334428 (umhos/cm), QC Sample No: BK62582 (BK62588, BK62589, BK62591)													
Conductivity	BRL	5.0	600	600	0	103						85 - 115	20
QA/QC Batch 334419 (pH), QC Sample No: BK62582 (BK62589, BK62590)													
pH				6.57		98.7						85 - 115	20
QA/QC Batch 334549 (pH), QC Sample No: BK63199 (BK62591)													
pH			7.52	7.34	2.40	98.0						85 - 115	20

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference

LCS - Laboratory Control Sample

LCSD - Laboratory Control Sample Duplicate

MS - Matrix Spike

MS Dup - Matrix Spike Duplicate

NC - No Criteria

Intf - Interference

Phyllis Shiller, Laboratory Director

February 11, 2016

Thursday, February 11, 2016

Sample Criteria Exceedences Report

GBK62588 - NEB

Page 1 of 1

Criteria: None

State: MA

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
--------	-------	-----------------	----------	--------	----	----------	----------------	-------------------

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.



CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: service@phoenixlabs.com Fax (860) 645-0823

Temp 400 Pg of

Data Delivery (check one):

Format: Excel Pdf Gis Key

Customer: New England Bioassay
Address: 77 Batson Drive
Manchester, CT 06042

Client Services (860) 645-8726 Format: Excel Pdf Gis K
Project: Specialty Minerals (MA) Project P.O.: 21678
Report to: Kim Wills Phone #: 860-643-9560
Invoice to: Kim Wills Fax #: 860-646-7169

Client Sample - Information - Identification

**Sampler's
Signature** _____ **Date** _____

Analysis Request

Matrix Code: DW=drinking water WW=wastewater S=soil/solid O=other
GW=groundwater SL=sludge A=air

Relinquished by:	Accepted by:	Date:	Time:
<u>Pat Gandy</u>	<u>Cris</u> <u>THURSDAY</u>	2-8-16 2-8-16	1435 1510

Turnaround

- 1 Day*
- 2 Days*
- 3 Days*
- Standard
- Other

*** Surcharge Applies**

- Requirements for CT
- Res. Criteria
- GW Protection
- GA Mobility
- GB Mobility
- SW Protection
- Res. Vol.
- Ind. Vol.

Requirements for MA

- GW-1
- GW-2
- GW-3
- S-1
- S-2
- S-3
- MCP Certification
- Other



Monday, February 15, 2016

Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Project ID: SPECIALTY MINERALS
Sample ID#s: BK63705 - BK63706

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Phyllis Shiller".

Phyllis Shiller

Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

February 15, 2016

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information

Matrix: WASTE WATER
Location Code: NEB
Rush Request: Standard
P.O.#: 21678

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date

Time

02/10/16 6:39
02/10/16 16:00

Laboratory Data

SDG ID: GBK63705
Phoenix ID: BK63705

Project ID: SPECIALTY MINERALS
Client ID: EFFLUENT 2 C36-1310

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Ammonia as Nitrogen	< 0.05	0.05	mg/L	1	02/12/16	WHM	E350.1

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director

February 15, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

February 15, 2016

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information

Matrix: WASTE WATER
Location Code: NEB
Rush Request: Standard
P.O.#: 21678

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date

Time

02/10/16 6:21
02/10/16 16:00

Laboratory Data

SDG ID: GBK63705

Phoenix ID: BK63706

Project ID: SPECIALTY MINERALS
Client ID: RECEIVING WATER 2 C36-1311

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Ammonia as Nitrogen	< 0.05	0.05	mg/L	1	02/12/16	WHM	E350.1

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director

February 15, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

February 15, 2016

QA/QC Data

SDG I.D.: GBK63705

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 334711 (mg/L), QC Sample No: BK63378 (BK63705, BK63706)													
Ammonia as Nitrogen	BRL	0.05	0.08	0.07	NC	106			105			85 - 115	20

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference

LCS - Laboratory Control Sample

LCSD - Laboratory Control Sample Duplicate

MS - Matrix Spike

MS Dup - Matrix Spike Duplicate

NC - No Criteria

Intf - Interference

Phyllis Shiller, Laboratory Director
February 15, 2016

Monday, February 15, 2016

Sample Criteria Exceedences Report

GBK63705 - NEB

Page 1 of 1

Criteria: None

State: MA

SampNo Acode Phoenix Analyte

Criteria

Result

RL

Criteria

RL
Criteria

Analysis
Units

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.



CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: service@phoenixlabs.com Fax (860) 645-0823

Client Services (860) 645-8726

Customer: New England Bioassay
Address: 77 Batson Drive
 Manchester, CT 06042

Project: Specialty Minerals Inc.
Report to: Kim Wills
Invoice to: Kim Wills

Temp	°C	Ice/ Blue Ice/ No Coolant	
Data Delivery (check one):			
<input type="checkbox"/>	Fax #:	_____	
<input checked="" type="checkbox"/>	Email:	kimberly.wilts@gza.com	
Format:	<input type="checkbox"/> Excel	<input type="checkbox"/> Pdf	<input type="checkbox"/> Gis Key
Project P.O:	21678		
Phone #:	860-643-9560		
Fax #:	860-646-7169		

Client Sample - Information - Identification

Relinquished by:

Accepted by:

Date _____

Time:

Comments, Special Requirements or Regulations:

Please see detection limits (MLs) listed next to each parameter above.

Please CC: Melanie.Cruff@gza.com and Robin.Faulk@gza.com on reports.

Turnaround:

- 1 Day*
 - 2 Days*
 - 3 Days*
 - Standard
 - Other

* Surcharge Applies

- Requirements for CT

- Res. Criteria
 - GW Protection
 - GA Mobility
 - GB Mobility
 - SW Protection
 - Res. Vol.
 - Ind. Vol.

- Requirements for MA

- GW-1
 - GW-2
 - GW-3
 - S-1
 - S-2
 - S-3
 - MCP Certification
 - Other



Wednesday, February 17, 2016

**Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040**

**Project ID: SPECIALTY MINERALS (MA)
Sample ID#s: BK64919 - BK64920**

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Phyllis Shiller".

**Phyllis Shiller
Laboratory Director**

**NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B**

**NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301**



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

February 17, 2016

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information

Matrix: WASTE WATER
Location Code: NEB
Rush Request: Standard
P.O.#: 21678

Custody Information

Collected by:
Received by: LK
Analyzed by: see "By" below

Date

Time

02/12/16 6:49
02/12/16 13:36

Laboratory Data

SDG ID: GBK64919

Phoenix ID: BK64919

Project ID: SPECIALTY MINERALS (MA)
Client ID: EFFLUENT 3 C36-1340

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Ammonia as Nitrogen	0.05	0.05	mg/L	1	02/16/16	WHM	E350.1

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director

February 17, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

February 17, 2016

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information

Matrix: WASTE WATER
Location Code: NEB
Rush Request: Standard
P.O.#: 21678

Custody Information

Collected by:
Received by: LK
Analyzed by: see "By" below

Date

Time

02/12/16 6:29
02/12/16 13:36

Laboratory Data

SDG ID: GBK64919

Phoenix ID: BK64920

Project ID: SPECIALTY MINERALS (MA)
Client ID: RECEIVING WATER 3 C36-1341

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Ammonia as Nitrogen	< 0.05	0.05	mg/L	1	02/16/16	WHM	E350.1

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

February 17, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

February 17, 2016

QA/QC Data

SDG I.D.: GBK64919

Parameter	Blank	Bk	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 334952 (mg/L), QC Sample No: BK64758 (BK64919, BK64920)													
Ammonia as Nitrogen		BRL	0.05	0.17	0.14	NC	96.5		103			85 - 115	20

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference

LCS - Laboratory Control Sample

LCSD - Laboratory Control Sample Duplicate

MS - Matrix Spike

MS Dup - Matrix Spike Duplicate

NC - No Criteria

Intf - Interference

Phyllis Shiller, Laboratory Director
February 17, 2016

Wednesday, February 17, 2016

Sample Criteria Exceedences Report

GBK64919 - NEB

Page 1 of 1

Criteria: None

State: MA

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
--------	-------	-----------------	----------	--------	----	----------	----------------	-------------------

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.



CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: service@phoenixlabs.com Fax (860) 645-0823

Client Services (860) 645-8726

Customer: New England Bioassay
Address: 77 Batson Drive
 Manchester, CT 06042

Project: Specialty Minerals (MA)
Report to: Kim Wills
Invoice to: Kim Wills

Temp	<input type="text"/> °C	<input type="checkbox"/> Ice/ <input type="checkbox"/> Blue Ice/ <input type="checkbox"/> No Coolant	
Data Delivery (check one):			
<input type="checkbox"/>	Fax #:		
<input checked="" type="checkbox"/>	Email: <input type="text"/> kimberly.wills@qza.com		
Format:	<input type="checkbox"/> Excel	<input type="checkbox"/> Pdf	<input type="checkbox"/> Gis Key
Project P.O:	<input type="text"/> 214678		
Phone #:	<input type="text"/> 860-643-9560		
Fax #:	<input type="text"/> 860-646-7169		

Client Sample - Information - Identification

Relinquished by

Accepted by:

Dat

8:10:11 13:11

Comments, Special Requirements or Regulations:

Please see detection limits (MLs) listed next to each parameter above.

Turnaround:

- 1 Day*
 - 2 Days*
 - 3 Days*
 - Standard
 - Other

* Surcharge Applies

- #### **Requirements for CT**

- Res. Criteria
 - GW Protection
 - GA Mobility
 - GB Mobility
 - SW Protection
 - Res. Vol.
 - Ind. Vol.

- #### **Requirements for MA**

- GW-1
 - GW-2
 - GW-3
 - S-1
 - S-2
 - S-3
 - MCP Certification
 - Other



Tuesday, February 23, 2016

**Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040**

**Project ID: SPECIALTY MINERALS
Sample ID#s: BK67047 - BK67048**

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Phyllis Shiller".

Phyllis Shiller

Laboratory Director

**NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B**

**NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301**



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

February 23, 2016

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information

Matrix: WASTE WATER
Location Code: NEB
Rush Request: Standard
P.O.#: 21678

Custody Information

Collected by:
Received by: SW
Analyzed by: see "By" below

Date

Time

02/10/16 6:39
02/18/16 14:56

Laboratory Data

SDG ID: GBK67047

Phoenix ID: BK67047

Project ID: SPECIALTY MINERALS
Client ID: EFFLUENT-2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Aluminum	0.074	0.010	mg/L	1	02/22/16	LK	E200.7
Cadmium	< 0.0001	0.0001	mg/L	1	02/22/16	RS	SM3113B
Copper	< 0.002	0.002	mg/L	1	02/22/16	LK	E200.7
Nickel	< 0.001	0.001	mg/L	1	02/22/16	LK	E200.7
Lead	< 0.0003	0.0003	mg/L	1	02/19/16	RS	SM3113B
Zinc	< 0.002	0.002	mg/L	1	02/22/16	LK	E200.7
Total Metals Digestion	Completed				02/19/16	AG	SW3050B

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director

February 23, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

February 23, 2016

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information

Matrix: WASTE WATER
Location Code: NEB
Rush Request: Standard
P.O.#: 21678

Custody Information

Collected by:
Received by: SW
Analyzed by: see "By" below

Date

Time

02/12/16 6:30
02/18/16 14:56

Laboratory Data

SDG ID: GBK67047

Phoenix ID: BK67048

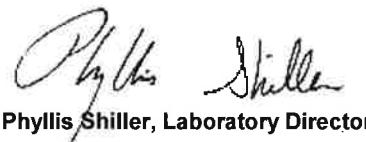
Project ID: SPECIALTY MINERALS
Client ID: EFFLUENT-3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Aluminum	0.077	0.010	mg/L	1	02/22/16	LK	E200.7
Cadmium	< 0.0001	0.0001	mg/L	1	02/22/16	RS	SM3113B
Copper	< 0.002	0.002	mg/L	1	02/22/16	LK	E200.7
Nickel	< 0.001	0.001	mg/L	1	02/22/16	LK	E200.7
Lead	< 0.0003	0.0003	mg/L	1	02/19/16	RS	SM3113B
Zinc	< 0.002	0.002	mg/L	1	02/22/16	LK	E200.7
Total Metals Digestion	Completed				02/19/16	AG	SW3050B

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller

Phyllis Shiller, Laboratory Director

February 23, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045

Tel. (860) 645-1102

Fax (860) 645-0823

QA/QC Report

February 23, 2016

QA/QC Data

SDG I.D.: GBK67047

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 335338 (mg/L), QC Sample No: BK66936 (BK67047, BK67048)													
Cadmium - Water	BRL	0.0001	0.001	<0.0004	NC	102			105			75 - 125	20
Lead (Furnace) - Water	BRL	0.001	0.038	0.030	23.5	106			124			75 - 125	30
QA/QC Batch 335436 (mg/L), QC Sample No: BK67564 (BK67047, BK67048)													
<u>ICP Metals - Aqueous</u>													
Aluminum	BRL	0.010	0.153	0.144	6.10	96.5			108			75 - 125	20
Copper	BRL	0.005	<0.005	<0.005	NC	99.8			102			75 - 125	20
Nickel	BRL	0.001	<0.001	<0.001	NC	106			103			75 - 125	20
Zinc	BRL	0.002	<0.002	<0.002	NC	103			105			75 - 125	20

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference

LCS - Laboratory Control Sample

LCSD - Laboratory Control Sample Duplicate

MS - Matrix Spike

MS Dup - Matrix Spike Duplicate

NC - No Criteria

Intf - Interference

Phyllis Shiller, Laboratory Director

February 23, 2016

Tuesday, February 23, 2016

Sample Criteria Exceedences Report

GBK67047 - NEB

Page 1 of 1

Criteria: None

State: MA

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
--------	-------	-----------------	----------	--------	----	----------	----------------	-------------------

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.



CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
 Email: service@phoenixlabs.com Fax (860) 645-0823

Client Services (860) 645-8726

WCP

Temp 70C Pg of

Data Delivery (check one):

- Fax #: _____
 Email: kimberly.wills@gza.com

Format: Excel Pdf Gis Key

Customer: New England Bioassay
 Address: 77 Batson Drive
 Manchester, CT 06042

Project: Specialty Minerals (MA)
 Report to: Kim Wills
 Invoice to: Kim Wills

Project P.O.: 211678
 Phone #: 860-643-9560
 Fax #: 860-646-7169

Client Sample - Information - Identification

Sampler's Signature _____ Date _____

Matrix Code:
 DW=drinking water WW=wastewater S=soil/solid O=other
 GW=groundwater SL=sludge A=air

Phoenix Sample #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled
07047	Effluent-2	WW	2/9-10/16	0628-0639
07048	Effluent-3	WW	2/11-12/16	0629-0630

Analysis Request

Cd (ML 0.0005 mg/L) (via AA)	Pb (ML 0.0005 mg/L) (via AA)	Cu (ML 0.003 mg/L)	Zn (ML 0.005 mg/L)	Ni (ML 0.005 mg/L)	Al (ML 0.02 mg/L)	Soil VOA Vials (1) methanol (1) Sod Bisulfate	GL Soil container (1) oz	GL Amber 1000ml (1) As is (1) HCl	PL As is (1) 250ml (1) 500ml (1) 1000ml	PL H2SO4 (1) 250ml (1) 250ml (1) 1000ml	PL HNO3 (1) 250ml (1) 1000ml	Bacteria Bottle
X X X X X X												
X X X X X X												

Relinquished by:

Robin Faulk

Accepted by:

G
TICMUM

Date:

2-18-16 1440
 2-18-16 1450

Time:

Turnaround:

- 1 Day*
- 2 Days*
- 3 Days*
- Standard
- Other

* Surcharge Applies

Requirements for CT

- Res. Criteria
- GW Protection
- GA Mobility
- GB Mobility
- SW Protection
- Res. Vol.
- Ind. Vol.

Requirements for MA

- GW-1
- GW-2
- GW-3
- S-1
- S-2
- S-3
- MCP Certification
- Other

Comments, Special Requirements or Regulations:

Please see detection limits (MLs) listed next to each parameter above

Please CC: Melanie.Cruff@gza.com and Robin.Faulk@gza.com on reports

NEW ENGLAND BIOASSAY - CHAIN-OF-CUSTODY**EFFLUENT**

Sampler: Peter Cardinal
 Title: Environmental Tech
 Facility: Specialty Minerals, Inc.

Sample Set #1

Sampling Method: Composite
 Sample ID: Effluent #1
 Start Date: 2/7/2016 Time: 10:21 AM
 End Date: 2/8/2016 Time: 6:38 AM

RECEIVING WATER

Sampler: Peter Cardinal
 Title: Environmental Tech
 Facility: Specialty Minerals, Inc.

Sampling Method: Grab (for pH and TRC only)
 Date Collected: 2/8/2016 2/8/2016
 Time Collected: 10:32 AM

Sampling Method: Grab
 Sample ID: Hoosic River #1
 Date Collected: 2/8/2016
 Time Collected: 10:24 AM

Sample Type:
 Prechlorinated
 Dechlorinated
 Unchlorinated
 Chlorinated

Effluent Sampling Location and Procedures:*24 HR COMPOSITE SAMPLE @ OUTFALL 001 USING ISCO Sampler***Receiving Water Sampling Location and Procedures:***Grab Sample @ Lime Street Bridge*

Requested Analysis: Chronic and modified acute

Sample Shipment

Method of Shipment:	NEB Courier	Date:	<u>2/8/2016</u>	Time:	<u>8:07 AM</u>
Relinquished By:	<u>Peter Cardinal</u>	Date:	<u>2/8/16</u>	Time:	<u>08:07</u>
Received By:	<u>Melinda Hoadley</u>	Date:	<u>2/8/2016</u>	Time:	<u>8:07 AM</u>
Relinquished By:	<u>Melinda Hoadley</u>	Date:	<u>2/8/2016</u>	Time:	<u>11:20</u>
Received By:	<u>Peter Cardinal</u>	Date:	<u>2/18/16</u>	Time:	<u>11:20</u>

Optional Information

Purchase Order # to reference on invoice: _____

FOR NEB USE ONLY

* Please return all ice packs NEB has provided to insure accurate temperature upon receipt to the NEB laboratory.

Temperature of Effluent Upon Receipt at Lab: 2.8 °CTemperature of Receiving Water Upon Receipt at Lab: 1.4 °CEffluent COC# C36- 1286Receiving Water COC# C36- 1287

**IF THIS COOLER IS MISPLACED OR THE LABEL IS LOST, PLEASE SHIP TO:
 KIM WILLS, NEW ENGLAND BIOASSAY 77 BATSON DRIVE MANCHESTER, CT 06042**

NEW ENGLAND BIOASSAY - CHAIN-OF-CUSTODY**EFFLUENT**

Sample Set #2

Sampler: Peter Cardinal
 Title: Environmental Tech
 Facility: Specialty Minerals, Inc.

Sampling Method: Composite

Sample ID: Effluent #2
 Start Date: 2/9/2016 Time: 6:28 AM
 End Date: 2/10/2016 Time: 10:39 AM

Sampling Method: Grab (for pH and TRC only)

Date Collected: N/A
 Time Collected: _____

Sample Type: _____
 Prechlorinated
 Dechlorinated
 Unchlorinated
 Chlorinated

Effluent Sampling Location and Procedures:24 HR COMPOSITE SAMPLE @ OUTFALL (X)1 using ISCO Sampler**Receiving Water Sampling Location and Procedures:**Grab Sample @ Lime Street Bridge.**Requested Analysis:** Chronic and modified acute**Sample Shipment**Method of Shipment: NEB Courier

Relinquished By:	<u>C. Cardinal</u>	Date: <u>2/10/16</u>	Time: <u>0830</u>
Received By:	<u>M. L. Ferguson</u>	Date: <u>2/10/16</u>	Time: <u>0845</u>
Relinquished By:	<u>M. L. Ferguson</u>	Date: <u>2/10/16</u>	Time: <u>1116</u>
Received By:	<u>K. S. Kruel</u>	Date: <u>2/10/16</u>	Time: <u>1116</u>

Optional Information

Purchase Order # to reference on invoice: _____

FOR NEB USE ONLY*** Please return all ice packs NEB has provided to insure accurate temperature upon receipt to the NEB laboratory.**Temperature of Effluent Upon Receipt at Lab: 27 °CEffluent COC# C36-1310Temperature of Receiving Water Upon Receipt at Lab: 20 °CReceiving Water COC# C36-1311

**IF THIS COOLER IS MISPLACED OR THE LABEL IS LOST, PLEASE SHIP TO:
 KIM WILLS, NEW ENGLAND BIOASSAY 77 BATSON DRIVE MANCHESTER, CT 06042**

NEW ENGLAND BIOASSAY - CHAIN-OF-CUSTODY

Sample Set #3

EFFLUENT

Sampler: Peter Cardinal
 Title: Environmental Tech
 Facility: Specialty Minerals, Inc.

Sampling Method: Composite

Sample ID: Effluent #3

Start Date: 2/11/2016 Time: 6:27 AM

End Date: 2/12/2016 Time: 6:49 AM

Sampling Method: Grab (for pH and TRC only)

Date Collected: N/A

Time Collected:

Sample Type: Prechlorinated
 Dechlorinated
 Unchlorinated
 Chlorinated

Effluent Sampling Location and Procedures:

24 HR COMPOSITE SAMPLE @ OUTFALL 001 Using 15CO Sampler

Receiving Water Sampling Location and Procedures:

Grab Sample @ Lime Street Bridge.

Requested Analysis: Chronic and modified acute

Sample Shipment

Method of Shipment: NEB Courier

Relinquished By: J. D. O.

Date: 2-12-2016 Time: 7:13 AM

Received By: D. O. M.

Date: 2-12-2016 Time: 0730

Relinquished By: J. D. O. / S.

Date: 2/12/16 Time: 11:58

Received By: Chauq

Date: 2/12/16 Time: 1158

Optional Information

Purchase Order # to reference on invoice: _____

FOR NEB USE ONLY

* Please return all ice packs NEB has provided to insure accurate temperature upon receipt to the NEB laboratory.

Temperature of Effluent Upon Receipt at Lab: 2.9 °C

Temperature of Receiving Water Upon Receipt at Lab: 1.4 °C

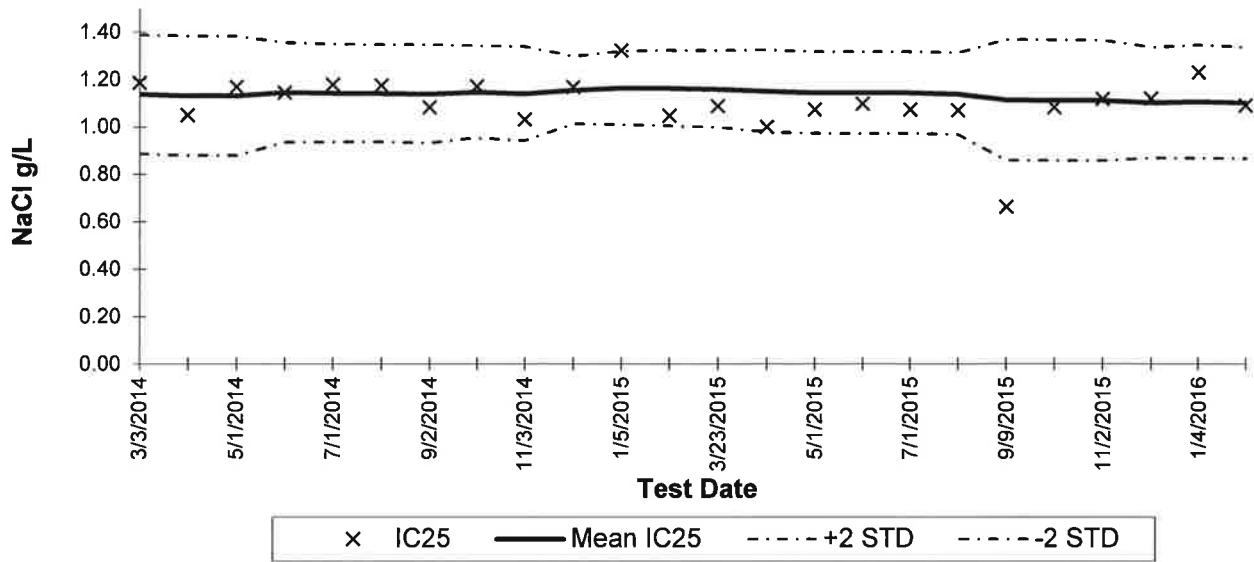
Effluent COC# C36-1340

Receiving Water COC# C36-1341

**IF THIS COOLER IS MISPLACED OR THE LABEL IS LOST, PLEASE SHIP TO:
 KIM WILLS, NEW ENGLAND BIOASSAY 77 BATSON DRIVE MANCHESTER, CT 06042**

New England Bioassay
Reference Toxicant Data: *Ceriodaphnia dubia* Chronic Reproduction IC₂₅

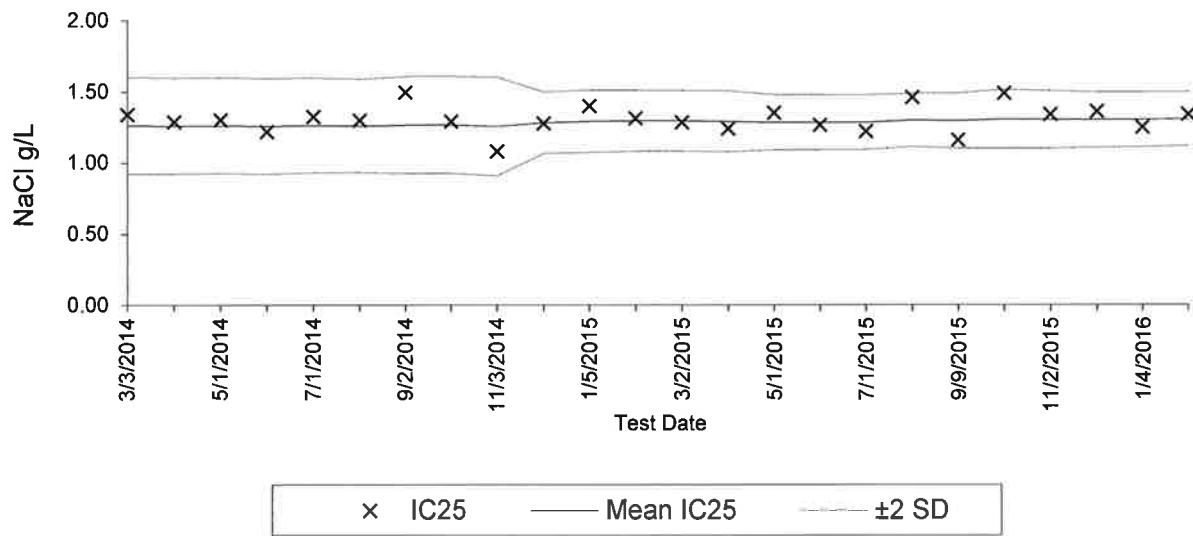
Reference Toxicant: Sodium chloride
Test Dates: March 2014 - Feb 2016



Test ID	Date	IC ₂₅	Mean IC ₂₅	STD	-2STD	+2STD	CV National		
							CV	75th%	90th%
14-256	3/3/2014	1.19	1.14	0.13	0.89	1.39	0.11	0.45	0.62
14-580	4/14/2014	1.05	1.13	0.13	0.88	1.38	0.11	0.45	0.62
14-708	5/1/2014	1.17	1.13	0.13	0.88	1.38	0.11	0.45	0.62
14-913	6/2/2014	1.15	1.15	0.11	0.94	1.36	0.09	0.45	0.62
14-1016	7/1/2014	1.18	1.14	0.10	0.94	1.35	0.09	0.45	0.62
14-1202	8/1/2014	1.18	1.14	0.10	0.94	1.35	0.09	0.45	0.62
14-1426	9/2/2014	1.08	1.14	0.10	0.93	1.35	0.09	0.45	0.62
14-1629	10/1/2014	1.17	1.15	0.10	0.95	1.34	0.08	0.45	0.62
14-1886	11/3/2014	1.03	1.14	0.10	0.94	1.34	0.09	0.45	0.62
14-1982	12/1/2014	1.17	1.15	0.07	1.01	1.30	0.06	0.45	0.62
15-79	1/5/2015	1.32	1.16	0.08	1.01	1.32	0.07	0.45	0.62
15-148	2/2/2015	1.05	1.16	0.08	1.00	1.32	0.07	0.45	0.62
15-378	3/23/2015	1.09	1.16	0.08	1.00	1.32	0.07	0.45	0.62
15-460	4/1/2015	1.00	1.15	0.09	0.98	1.32	0.08	0.45	0.62
15-602	5/1/2015	1.07	1.14	0.09	0.97	1.32	0.08	0.45	0.62
15-750	6/1/2015	1.10	1.14	0.09	0.97	1.32	0.08	0.45	0.62
15-955	7/1/2015	1.07	1.14	0.09	0.97	1.32	0.07	0.45	0.62
15-1211	8/3/2015	1.07	1.14	0.09	0.97	1.31	0.08	0.45	0.62
15-1375	9/9/2015	0.66	1.11	0.13	0.86	1.37	0.11	0.45	0.62
15-1540	10/1/2015	1.08	1.11	0.13	0.86	1.37	0.11	0.45	0.62
15-1691	11/2/2015	1.12	1.11	0.13	0.86	1.36	0.11	0.45	0.62
15-1897	12/28/2015	1.12	1.10	0.12	0.87	1.33	0.11	0.45	0.62
16-37	1/4/2016	1.23	1.11	0.12	0.87	1.34	0.11	0.45	0.62
16-138	2/1/2016	1.09	1.10	0.12	0.87	1.34	0.11	0.45	0.62

New England Bioassay
Reference Toxicant Data: *Pimephales promelas* 7-day Chronic Growth IC₂₅

Reference Toxicant: Sodium chloride
Test Dates: March 2014 - Feb 2016



Test ID	Date	IC ₂₅	Mean IC ₂₅	STD	-2STD	+2STD	CV	CV National	CV National
								75th	90th
14-325	3/3/2014	1.34	1.26	0.17	0.92	1.60	0.13	0.38	0.45
14-448	4/1/2014	1.29	1.26	0.17	0.92	1.60	0.13	0.38	0.45
14-709	5/1/2014	1.30	1.26	0.17	0.92	1.60	0.13	0.38	0.45
14-914	6/2/2014	1.22	1.26	0.17	0.92	1.59	0.13	0.38	0.45
14-1061	7/1/2014	1.32	1.26	0.17	0.93	1.60	0.13	0.38	0.45
14-1231	8/1/2014	1.30	1.26	0.16	0.93	1.59	0.13	0.38	0.45
14-1427	9/2/2014	1.49	1.27	0.17	0.92	1.61	0.13	0.38	0.45
14-1630	10/1/2014	1.29	1.27	0.17	0.93	1.61	0.13	0.38	0.45
14-1887	11/3/2014	1.08	1.25	0.17	0.91	1.60	0.14	0.38	0.45
14-2051	12/1/2014	1.28	1.28	0.11	1.07	1.50	0.08	0.38	0.45
15-80	1/5/2015	1.39	1.29	0.11	1.07	1.51	0.08	0.38	0.45
15-149	2/2/2015	1.31	1.30	0.11	1.08	1.51	0.08	0.38	0.45
15-255	3/2/2015	1.28	1.29	0.11	1.08	1.51	0.08	0.38	0.45
15-461	4/1/2015	1.24	1.29	0.11	1.08	1.50	0.08	0.38	0.45
15-604	5/1/2015	1.35	1.28	0.10	1.09	1.48	0.08	0.38	0.45
15-803	6/1/2015	1.27	1.28	0.10	1.09	1.48	0.08	0.38	0.45
15-956	7/1/2015	1.22	1.28	0.10	1.09	1.48	0.07	0.38	0.45
15-1212	8/3/2015	1.46	1.30	0.09	1.11	1.49	0.07	0.38	0.45
15-1376	9/9/2015	1.16	1.29	0.10	1.10	1.49	0.08	0.38	0.45
15-1541	10/1/2015	1.49	1.31	0.10	1.10	1.51	0.08	0.38	0.45
15-1742	11/2/2015	1.34	1.30	0.10	1.10	1.50	0.08	0.38	0.45
15-1881	12/1/2015	1.36	1.30	0.10	1.10	1.50	0.08	0.38	0.45
16-36	1/4/2016	1.25	1.30	0.10	1.11	1.49	0.07	0.38	0.45
16-139	2/1/2016	1.34	1.31	0.10	1.12	1.50	0.07	0.38	0.45